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*bulletin of*  
**Duke University**  
**1996-97**

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*The Divinity School*







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**Duke University**  
**1996-97**

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*The Divinity School*

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The information in the bulletin applies to the academic year 1996-97 and is accurate and current, to the best of our knowledge, as of February 1996. The university reserves the right to change programs of study, academic requirements, lecturers, teaching staffs, the announced university calendar, and other matters described in the bulletin without prior notice, in accordance with established procedures.

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For further information about the Divinity School, call (919) 660-3436.

Information that the university is required to make available under the Student Right to Know and Campus Security Acts may be obtained from the Office of University Relations at 684-2823 or in writing at 615 Chapel Drive, Duke University, Durham, North Carolina 27708.

For information concerning Duke University's alcohol and drug policies, please refer to the *Bulletin of Information and Regulations*.

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May 1996

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# Calendar of the Divinity School

## Fall 1996

|                  |   |
|------------------|---|
| <b>August</b>    |   |
| 28               | Wednesday, 8:30 A.M.—Orientation for new students   |
| 29               | Thursday—Orientation continues—Registration for new students  |
| <b>September</b> |   |
| 3                | Tuesday, 12:00 noon—Fall semester classes begin<br>Drop/add period begins—Divinity School Opening Convocation, Duke University Chapel |
| 6                | Friday, 11:00 A.M.—Honor Code Lecture   |
| 16               | Monday, 12:00 noon—Drop/add period ends   |
| <b>October</b>   |   |
| 18               | Friday, 6:00 P.M.—Fall recess begins  |
| 21-23            | Monday—Wednesday, Divinity School Convocation and Pastors School—Gray and Hickman Lectures  |
| 23               | Wednesday, 8:30 A.M.—Fall recess ends   |
| 30               | Wednesday—Registration for spring semester  |
| <b>November</b>  |   |
| 19               | Tuesday, 4:00 P.M.—Last date to withdraw with "W"—Registration period ends  |
| 27               | Wednesday, 1:00 P.M.—Thanksgiving recess begins—1:00 classes meet at 12:00  |
| <b>December</b>  |   |
| 2                | Monday, 12:00 noon—Classes resume   |
| 12               | Thursday, 9:30 P.M.—Fall semester classes end   |
| 17               | Tuesday—Final examinations begin  |
| 20               | Friday—Final examinations end   |

## Spring 1997

|                |  |
|----------------|--|
| <b>January</b> |  |
| 14             | Tuesday, 12:00 noon—Orientation for new students                                   |
| 15             | Wednesday—Registration for returning students<br>Registration for new students     |
| 16             | Thursday, 8:30 A.M.—Spring semester classes begin<br>Drop/add period begins        |
| 29             | Wednesday, 12:00 noon—Drop/add period ends   |
| <b>March</b>   |  |
| 14             | Friday, 6:00 P.M.—Spring recess begins   |
| 24             | Monday, 12:00 noon—Classes resume  |
| 27             | Maundy Thursday—Classes do not meet  |
| 28             | Good Friday—Classes do not meet  |
| <b>April</b>   |  |
| 2              | Wednesday—Registration for fall semester   |
| 4              | Friday, 4:00 P.M.—Last day to withdraw with "W"                                    |
| <b>May</b>     |  |
| 1              | Thursday, 11:00 A.M.—Divinity School Closing Convocation<br>Duke University Chapel |
| 2              | Friday, 2:00 P.M.—Spring semester classes end                                      |
| 6              | Tuesday—Final examinations begin   |
| 9              | Friday—Final examinations end  |
| 17             | Saturday—Divinity School baccalaureate   |
| 18             | Sunday—Commencement exercises  |



# University Administration

## GENERAL ADMINISTRATION

Nannerl Overholser Keohane, Ph.D., *President*  
John W. Strohbehn, Ph.D., *Provost*  
Ralph Snyderman, M.D., *Chancellor for Health Affairs and Dean, School of Medicine*  
Tallman Trask III, Ph.D., *Executive Vice-President*  
Eugene J. McDonald, LL.M., *Executive Vice-President—Asset Management*  
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John J. Piva, Jr., B.A., *Senior Vice-President for Alumni Affairs and Development*  
Charles E. Putman, M.D., *Senior Vice-President for Research Administration and Policy*  
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John F. Adcock, B.S., *Vice-President and Corporate Controller*  
Leonard C. Beckum, Ph.D., *Vice-President and Vice-Provost*  
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Janet Smith Dickerson, M.Ed., *Vice-President for Student Affairs*  
Joseph S. Beyel, M.S., *Vice-Chancellor for Medical Center Development and Alumni Affairs*  
William J. Donelan, M.S., *Vice-Chancellor and Chief Financial Officer for Medical Center Administration*  
Gordon G. Hammes, Ph.D., *Vice-Chancellor for Medical Center Academic Affairs*  
Mark C. Rogers, M.D., *Vice-Chancellor for Health Services and Executive Director of Duke University Hospital*  
David B. Adcock, J.D., *University Counsel*  
N. Allison Haltom, A.B., *Secretary of the University*  
William H. Willimon, M.Div., S.T.D., *Dean of the Chapel*

## Divinity School Administration

### EDUCATIONAL ADMINISTRATION

Dennis M. Campbell (1979), B.D., Ph.D., D.D., *Dean of the Divinity School*  
Russell E. Richey (1986), B.D., Ph.D., *Associate Dean for Academic Programs*  
B. Maurice Ritchie (1973), B.D., Th.M., *Associate Dean for Student Life and Field Education*  
Carter S. Askren (1988), M.T.S., *Director of Communications*  
Wesley F. Brown (1981), M.Div., *Associate Dean for Development and Alumni Affairs*  
Gregory F. Duncan (1988), M.Div., *Director of Admissions*  
F. Owen Fitzgerald (1990), B.D., D.D., *Special Assistant to the Dean*  
Ann I. Hoch (1989), M.Div., Ph.D., *Director of Student Life and Associate Director of Field Education*  
Kimberly W. Woodlief (1994), B.S., *Director of General Administration and Finance*

### Division of Special Programs

Jackson W. Carroll (1993), B.D., Ph.D., D.D., *Director of the J.M. Ormond Center for Research, Planning, and Development*  
Richard P. Heitzenrater (1993), B.D., M.Div., Ph.D., *Director, Wesley Works Editorial Project*  
T. Furman Hewitt (1992), Th.D., Ph.D., *Executive Director of the Baptist House of Studies*  
William B. Lawrence (1993), M.Div., M.Phil., Ph.D., *Associate Director of the J.M. Ormond Center for Research, Planning, and Development*  
Carol J. Voisin (1996), M.Div., Th.D., *Director of Continuing Education*

### Division of Advanced Studies

Elizabeth Clark, Ph.D., *Director of Graduate Studies in Religion*

### Library

Roger L. Loyd (1992), Th.M., M.L.S., *Director of the Divinity School Library*  
Roberta A. Schaafsma (1993), B.A., A.M.L.S., M.A., *Associate/Reference Librarian*  
Tom Clark, B.A., *Circulation Librarian*  
Mary Yordy, *Assistant Circulation Librarian*  
Melissa Harrell, B.S., *Assistant to the Librarian*

### SUPPORT STAFF

Dixie Albea-Russell, B.S., *Senior Accounting Clerk*  
M. Lois Blanton, *Administrative Secretary, Office of the Dean*  
Josephine M. Burt, A.A., *Administrative Secretary, Office of Black Church Affairs*  
A. Gail Chappell, *Faculty Secretary*

Mary D. Collins, M.S., Ph.D., *Staff Specialist, Registry*  
 Sarah S. Freedman, M.A., M.T.S., *Faculty Secretary*  
 Adina J. Henson, A.A., *Administrative Secretary, Office of Continuing Education*  
 Ann B. Kellam, *Secretary, Office of Admissions/Financial Aid*  
 Cynthia LaMaster, B.S., *Accounting Specialist*  
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 Virginia E. Parrish, *Faculty Secretary*  
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 Betty A. Suddaby, *Administrative Secretary, Office of Admissions*  
 Karen Teague, B.A., *Senior Research Aide, J. M. Ormond Center*  
 Sheila M. Williams, *Financial Aid Assistant*

## FACULTY

\*Lloyd Richard Bailey (1971), B.D., Ph.D., *Professor of Old Testament*  
 Teresa Berger (1985), L.Th., M.Th., Dr. Theol., Dipl. Theol., Dr. Theol., *Associate Professor of Ecumenical Theology*  
 Dennis M. Campbell (1979), B.D., Ph.D., D.D., *Professor of Theology and Dean of the Divinity School*  
 †Jackson W. Carroll (1993) B.D., Ph.D., D.D., *Ruth W. and A. Morris Williams Professor of Religion and Society*  
 ‡James L. Crenshaw (1987), B.D., Ph.D., D.D., *Robert L. Flowers Professor of Old Testament*  
 Susan J. Dunlap (1995), M.Div., Th.M., Ph.D., *Assistant Professor of Pastoral Theology*  
 James Michael Efrid (1962), B.D., Ph.D., *Professor of Biblical Interpretation*  
 Gayle Carlton Felton (1989), M.Div., Ph.D., *Assistant Professor of Christian Nurture*  
 Albert F. Fisher (1974), M.Div., D.D., *Adjunct Professor of Parish Work*  
 ‡Mary McClintock Fulkerson (1983), M.Div., Ph.D., *Associate Professor of Theology*  
 Miriam Anne Glover-Wetherington (1991), M.A., M.Div., Ph.D., *Assistant Professor of Pastoral Care*  
 Stanley Hauerwas (1984), B.D., M.A., M.Phil., Ph.D., D.D., *Gilbert T. Rowe Professor of Theological Ethics*  
 Richard B. Hays (1991), M.Div., Ph.D., *Professor of New Testament*  
 Richard P. Heitzenrater (1993), B.D., M.Div., Ph.D., *Professor of Church History and Wesley Studies*  
 Willie J. Jennings (1990), M.Div., Ph.D., *Assistant Professor of Theology and Black Church Studies*  
 Susan A. Keefe (1988), M.A., Ph.D., *Associate Professor of Church History*  
 Thomas A. Langford (1956), B.D., Ph.D., D.D., *William Kellon Quick Professor of Theology and Methodist Studies*  
 Elizabeth LaRocca-Pitts (1996), M.Div., Ph.D., *Assistant Professor of Old Testament*  
 William B. Lawrence (1993), M.Div., M.Phil., Ph.D., *Professor of the Practice of Christian Ministry*  
 Richard Lischer (1979), M.A., B.D., Ph.D., *Professor of Homiletics*  
 Roger L. Loyd (1992), Th.M., M.L.S., *Professor of the Practice of Theological Bibliography*  
 Keith Meador (1995), M.D., Th.M., M.P.H., *Associate Clinical Professor of the Practice of Pastoral Care*  
 Priscilla Pope-Levison (1993), B.Mus., M.Div., Ph.D., *Assistant Professor of the Practice of Evangelism*  
 Jefferson Powell (1989), A.M., M.Div., J.D., Ph.D., *Professor of Law and Divinity*  
 Russell E. Richey (1986), B.D., Ph.D., *Professor of Church History and Associate Dean for Academic Programs*  
 Dwight Moody Smith, Jr. (1965), B.D., Ph.D., Litt.D., *George Washington Ivey Professor of New Testament*  
 Harmon L. Smith (1959), B.D., Ph.D., *Professor of Moral Theology*  
 David Curtis Steinmetz (1971), B.D., Th.D., *Amos Ragan Kearns Professor of the History of Christianity*  
 James L. Travis III (1987), M.Div., Ph.D., *Clinical Professor of Pastoral Care*  
 Karen B. Westerfield Tucker (1989), M.Div., M.A., Ph.D., *Assistant Professor of Liturgics*  
 William C. Turner, Jr. (1982), M.Div., Ph.D., *Associate Professor of the Practice of Homiletics*  
 Grant Wacker (1992), Ph.D., *Associate Professor of the History of Religion in America*  
 #Geoffrey Wainwright (1983), M.A., D.D. (Cantab.), Dr. Theol., *Robert Earl Cushman Professor of Christian Theology*  
 Brett Webb-Mitchell (1995), M.Div., Th.M., Ph.D., *Assistant Professor of Christian Education*  
 William H. Willimon (1984), M.Div., S.T.D., D.D., *Professor of Christian Ministry and Dean of the Chapel*

## FACULTY, DEPARTMENT OF RELIGION

(Teachers in the graduate program in religion whose courses are open to Divinity School students.)

Kelman Bland (1973), Ph.D., *Associate Professor of Judaic Studies*  
 Elizabeth Clark (1982), Ph.D., *John Carlisle Kilgo Professor of Christianity*  
 Roger Corless (1970), Ph.D., *Associate Professor of History of Religions*  
 Vincent J. Cornell (1991), Ph.D., *Assistant Professor of Religion*

\*Research leave.

†Sabbatical leave, spring, 1997.

‡Sabbatical leave, 1996-97.

#Sabbatical leave, fall, 1996.

Hans Hillerbrand (1988), Ph.D., *Professor of Religion*  
 Wesley A. Kort (1965), Ph.D., *Professor of Religion and Literature*  
 C. Eric Lincoln (1976), Ph.D., *Professor of Sociology of Religion*  
 Bruce B. Lawrence (1971), Ph.D., *Professor of History of Religions*  
 Dale Martin (1988), Ph.D., *Assistant Professor of Religion*  
 Carol L. Meyers (1979), Ph.D., *Associate Professor of Old Testament*  
 Eric M. Meyers (1969), Ph.D., *Professor of Judaic Studies*  
 Robert T. Osborn (1954), Ph.D., *Professor of Theology*  
 Harry B. Partin (1964), Ph.D., *Associate Professor of History of Religions*  
 Melvin K. H. Peters (1983), Ph.D., *Associate Professor of Old Testament*  
 E. P. Sanders (1989), B.D., Th.D., M.A., D.Litt., D.Th., *Arts and Sciences Professor of Religion*  
 Kenneth J. Surin (1987), Ph.D., *Associate Professor of Religion*  
 Orval Wintermute (1958), Ph.D., *Professor of Old Testament*

## EMERITI

Frank Baker (1960), B.D., Ph.D., *Professor Emeritus of English Church History*  
 Waldo Beach (1946), B.D., Ph.D., *Professor Emeritus of Christian Ethics*  
 William David Davies (1966), M.A., D.D., D.L.H., D.D., D.Th., F.B.A., *George Washington Ivey Professor Emeritus of Advanced Studies and Research in Christian Origins*  
 Donn Michael Farris (1950), M.Div., M.S. in L.S., *Professor Emeritus of Theological Bibliography*  
 Stuart C. Henry (1959), B.D., Ph.D., *Professor Emeritus of American Christianity*  
 Osmond Kelly Ingram (1959), B.D., *Professor Emeritus of Parish Ministry*  
 Creighton Lacy (1953), B.D., Ph.D., *Professor Emeritus of World Christianity*  
 Roland E. Murphy (1971), M.A., S.T.D., S.S.L., Litt.D., *George Washington Ivey Professor Emeritus of Biblical Studies*  
 M. Wilson Nesbitt (1958), B.D., D.D., *Adjunct Professor Emeritus of the Work of the Rural Church*  
 McMurry S. Richey (1954), B.D., Ph.D., *Professor Emeritus of Theology and Christian Nurture*  
 Charles K. Robinson (1961), B.D., Ph.D., *Associate Professor Emeritus of Philosophical Theology*  
 Dan O. Via (1984), B.D., Ph.D., Litt.D., *Professor Emeritus of New Testament*  
 Franklin Woodrow Young (1968), B.D., Ph.D., *Amos Ragan Kearns Professor Emeritus of New Testament and Patristic Studies*

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DIVINITATIS SACR





*Dean Dennis M. Campbell*



## Duke University

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The Divinity School  
Office of the Dean

TELEPHONE (919) 660-3434  
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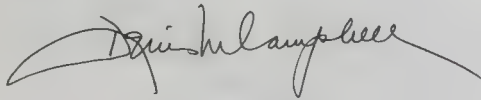
The Divinity School was the first of Duke University's graduate professional schools to open its doors after the university was founded. This priority is indicative of the central role the school plays in the total university. We take our university setting seriously and believe that the advantages of theological education in the middle of Duke University are considerable.

The quality of our student body has never been better. We enroll 503 students in the professional degree programs (M.Div., M.T.S., M.R.E., and Th.M.) and an additional 100 students in the M.A./Ph.D. program. Our students are men and women from over 200 undergraduate schools, 38 denominations, 33 states and 9 foreign countries. Women constitute approximately 36 percent of the total enrollment, and ethnic minority students 11 percent. Most of our students receive substantial financial support in the form of scholarships and grants-in-aid, this year a total of \$1.2 million. Duke's program of financial aid is rightfully renowned.

While the accomplishments of its distinguished faculty and aggressive international programs earn it increasing prominence in theological education and the ecumenical world, the Divinity School enjoys exceptionally strong regional, denominational, and alumni support as well.

Duke's unique field education program emphasizes both remunerative employment and vocational preparation. The program's funding from The Duke Endowment makes it possible for our students to advance their competency in ministry while receiving substantial financial assistance.

We are a school of the Church and of the university; we are a school in the Wesleyan tradition and in the ecumenical tradition; we are a school committed to professional education for the practice of lay and ordained ministries and to graduate theological education, research, and scholarship. These are exciting times at the Divinity School as we seek bold and imaginative initiatives equal to the challenges of the twenty-first century.



Dennis M. Campbell

*Dean*

*General Information*



## History

Duke University began as a simple, one-room school house in rural Randolph County, North Carolina. Established as Union Institute by Quakers and Methodists in 1838, it became Normal College in 1851. Normal was reorganized as Trinity College in 1859, when the Methodist Church became a major financial supporter. In 1892 Trinity College moved to Durham, North Carolina.

In 1924 James B. Duke established a trust fund for educational and charitable purposes. The chief beneficiary, Trinity College, became Duke University. The purpose for establishing the trust was clear: "I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical lines, is, next to religion, the greatest civilizing influence. . . . And I advise that the courses at this institution be arranged, first, with special reference to the training of preachers, teachers, lawyers, and physicians, because these are most in the public eye, and by precept and example can do most to uplift mankind." The School of Religion began its work in the academic year 1926-27, and formal exercises for its opening were held on 9 November 1926. In 1940 the name was changed to the Divinity School.

During its history, the Divinity School has had outstanding teachers, scholars, and administrative leaders,\* and its graduates have distinguished themselves by making significant contributions to the Church and the world. In 1964 a program of expansion was begun, culminating in February 1972, when the Divinity School doubled its physical facilities and moved into a handsome new building.

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\* Since the founding of the school in 1926, the following persons have served as deans or acting deans: Edmund Davidson Soper, 1926-28; Elbert Russell, 1928-41; Paul Neff Garber, 1941-44; Harvie Branscomb, 1944-46; Gilbert T. Rowe, acting dean of the faculty, 1946-47; Paul E. Root (elected in 1947 but died before assuming office); Harold A. Bosley; 1947-50; James Cannon III, acting dean 1950-51, dean 1951-58; Robert Earl Cushman, 1958-71; Thomas A. Langford, 1971-81; Jameson Jones, 1981-82; Dennis M. Campbell, 1982-.



## The Role of the Divinity School

The Divinity School represents theological inquiry and learning within the greater university. By history and indenture, it stands within the Christian tradition, mindful of its distinctive lineage in and its continuing obligation to the United Methodist Church. The Divinity School, although United Methodist in tradition and dependency, receives students from many Christian denominations and offers its educational resources to representatives of the several communions who seek an education for church-related ministry. From its inception, it has been ecumenical in aspiration, teaching, and practice, as well as in its faculty. Educational policy has consistently aspired to foster a Christian understanding “truly catholic, truly evangelical, and truly reformed.”

The principal purpose of the Divinity School is the professional education for the ministry, which in today's world is manifested in a variety of forms. Although the conventional and inherited styles of ministry are now undergoing change, the Divinity School curriculum continues to prepare students for informed and discriminating discharge of the historic offices of church and congregation through the ministry of word and sacrament, pastoral care, and teaching. The Divinity School believes these offices will remain, although the form and context of the local church may change.

With this in mind, the Divinity School tries to prepare students for the mature performance of their vocation. It hopes to develop in each graduate a disciplined intelligence, informed by sound learning and equipped for worthy professional service. Its resources are offered to students with a diversity of ministerial aims, although the school seeks, by recruitment and financial support, to prepare persons for ordination or lay professional vocations in the churches. In all its endeavors, the Divinity School aims to serve Jesus Christ through service to the Church and the world.

## The Relation of the Divinity School to Duke University

The Divinity School is an integral part of the university and shares fully in its activities, privileges, and responsibilities. The Sunday services in the university chapel give Divinity School students each year an opportunity to hear several of the country's leading preachers. The university libraries make a rich collection of books and other materials easily accessible. Without paying additional fees, selected courses in the graduate and professional schools are open to Divinity School students, as well as the general, cultural, and recreational resources of the university.

## Library Resources

**Divinity School Library.** The Divinity School Library contains a collection of more than 295,000 volumes in the field of religion and related disciplines and affords an unusual wealth of material for the seminary student. Although an integral part of the university's twelve-unit library system, which possesses more than 4,000,000 volumes, the Divinity School Library has its own separate facilities in the Divinity School building. Its book collection is operated on the open stack system, and its reading rooms provide study facilities for students, space for the special reference collection in religion, and for the more than 600 religious periodicals to which the library currently subscribes.

Staffed by a librarian and a reference librarian trained in both theology and library administration, by a supporting staff of three persons, and by a number of student assistants, the Divinity School Library offers a variety of reference services to assist the student in selecting and locating materials. The staff, in cooperation with the faculty, maintains a book and periodical collection to support basic course work as well as advanced research in all major fields of religious studies.

The Divinity School Library is adjacent to the Perkins Library. The seminary student may use the resources and facilities of the Perkins Library, some of which include manuscripts, archives, public documents, newspapers, periodicals, microfilms, maps,

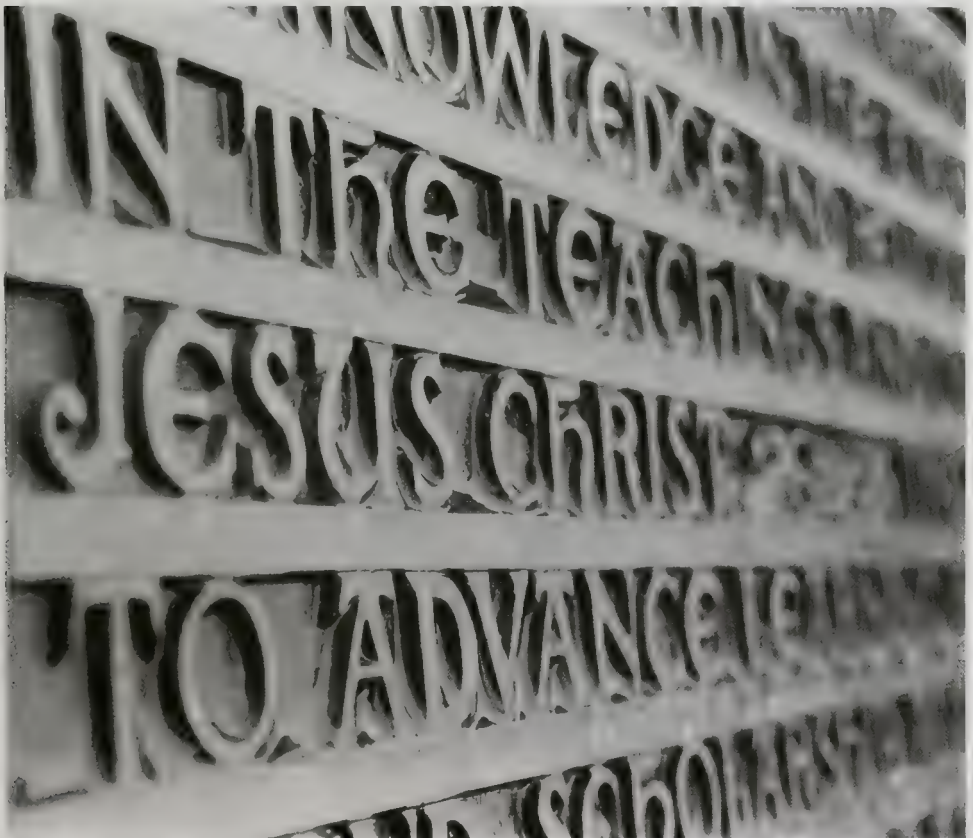
rare materials (among which are eighty-one prized ancient Greek manuscripts), and reference assistance. There is a provision for borrowing books from the libraries of the University of North Carolina and other neighboring institutions.

## Center for Studies in the Wesleyan Tradition

The Center for Studies in the Wesleyan Tradition was founded in 1979 and is supported by a permanent endowment of the Divinity School designated for its use. The center supports a wide variety of programs designed to advance teaching, research, and publication in Wesleyan history and theology.

**Library.** The Baker Collection is one of the two largest and finest collections of Wesley and Methodist materials extant. Named for Professor Emeritus Frank Baker, the world's foremost authority on John Wesley, and editor of the bicentennial edition of Wesley's works, a project based at Duke Divinity School, the Baker Collection is an unparalleled resource.

**Visiting Professors.** The center brings distinguished visiting professors to teach in the Divinity School. Recently, Dr. David Stacey, principal of Wesley College, Bristol, England, and Dr. Jose Miguez Bonino, professor of theology and ethics at the Protestant Theological Seminary in Buenos Aires, Argentina, served in this capacity. Visiting recently were Timothy Macquiban, director of the Wesley and Methodist Studies Center, Westminster College, Oxford (1994-95), and Hector La Porta, dean of the Comunidad Biblico Teologica in Lima and district superintendent of the Lima Callao District, Iglesia Metodista del Peru.



**Visiting Scholars.** The center makes research grants to scholars from around the world to work for various periods of time in the Divinity School. Among those who have served recently are Bishop Ole Borgen, United Methodist Bishop of Sweden, Norway, Denmark, Finland, and Estonia, and Professor Morna Hooker, Lady Margaret Professor of Divinity, Cambridge University, England.

**Visiting Lecturers.** The center has an extensive program of visiting lecturers that exposes students and faculty of the Divinity School to leading figures in the Wesleyan tradition from throughout the world. Most recently these included: Professor Peder Borgen, University of Trondheim, Norway; Dr. Manfred Marquardt, the Methodist Theological Seminary, Reutlingen, Germany; Ruediger Minor, bishop of the Eurasia Area, Moscow, Russia; the Reverend Helmut Nausner, district superintendent, Vienna, Austria; Professor Norman Young, Queens College, the University of Melbourne, Australia; and Walter Klaiber, bishop of Frankfurt, Germany.

**Publications.** The center is committed to a program of scholarly publication. In 1983, support was given for preparation of a reader in theology in the Wesleyan tradition that was published in 1984. The center recently translated *Theologie in Hymnen*, a study by Teresa Berger of Charles Wesley's hymnody. Professor Richard Heitzenrater will oversee the Wesley Works Project, a thirty-five volume collection of John Wesley's writings.

**Faculty Committee.** Divinity School faculty related to the center include Gayle C. Felton, Richard Heitzenrater, Thomas A. Langford, William B. Lawrence, Russell E. Richey, Geoffrey Wainwright, Karen Westerfield Tucker, and Dennis M. Campbell, dean and chairman.





*Faculty*



*Professor of Homiletics Richard Lischer*

## Faculty

The faculty of Duke University Divinity School is regarded as one of the world's strongest theological faculties. The faculty is committed to excellence in teaching, research, publication, and service to the Church, the university, and the wider community. The Duke faculty is particularly well-known for its strong commitment to the Church and its ministry. The faculty is very diverse including persons who come from all over the United States and the world. Virtually all major Christian traditions are represented, and identity with specific communities within the Christian tradition is taken seriously by faculty members. Because of its distinguished faculty, the Divinity School is an international center for research and publication in the theological disciplines and for reflection on the practice of ministry in the late twentieth century.

## Faculty Biographical Information

**Lloyd Richard Bailey**, *Professor of Old Testament*. B.A., B.D. (Duke University); Ph.D. (Hebrew Union College-Jewish Institute of Religion).



Professor Bailey's academic interests include biblical studies (primarily Pentateuch and Prophetic Literature), the problem of utilizing ancient texts as scripture ('text to sermon'), Ancient Near Eastern civilization and archaeology, and perspectives on aging, dying, and death. In these areas he has written and edited nearly two dozen books, more than thirty articles in journals and encyclopedias, and has prepared curriculum and media units for the United Methodist Church. He currently serves on the editorial boards of *Biblical Archaeologist* and *Quarterly Review*, is a past president of the Society of Biblical Literature (Southeastern Region), and is an elder in the Western North Carolina Annual Conference of the United Methodist Church. Prior to joining the Duke faculty, he taught at Union Theological Seminary in New York. Dr. Bailey is the author of *Genesis, Creation, and Creationism*.

**Teresa M. Berger**, *Associate Professor of Ecumenical Theology*. M.Th., Dipl. theol. (Mainz University, West Germany); L.Th. (St. John's College, Nottingham, England); Dr. theol. (University of Heidelberg); Dr. theol. (University of Munster).



Professor Berger's academic interests are in ecumenical and liturgical theology. The author of eight books, Dr. Berger has published research on the liturgical thinking of nineteenth-century Tractarianism, as well as on an ecumenical theology of worship, and on women and worship. She held visiting positions at the Roman Catholic faculties of the University of Mainz and Münster (West Germany), where she taught liturgical theology.

**Dennis M. Campbell**, *Dean of The Divinity School and Professor of Theology*. A.B. (Duke University); B.D. (Yale University); Ph.D. (Duke University); D.D. (Florida Southern).



Dean Campbell teaches in systematic theology. His particular research interests are in ecclesiology, including theology of ministry, and ethics. His books include *Authority and the Renewal of American Theology*; *Doctors, Lawyers, Ministers: Christian Ethics in Professional Practice*; *The Yoke of Obedience: The Meaning of Ordination in Methodism*; and *Who Will Go for Us? An Invitation to Ordained Ministry*. He has written numerous articles for journals and also served as a professor at the undergraduate level. An elder in the United Methodist Church, he has three times been a delegate to General Conference and is a member of the World Methodist Council. He was a delegate to the 1991 World Council of Churches Seventh International Assembly in Canberra, Australia. He serves on the Accrediting Commission of the Association of Theological Schools in the U.S. and Canada. Through his participation in several major academic boards, Dean Campbell is a national leader in U.S. higher education.



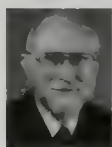
**Jackson Carroll**, *Ruth W. And A. Morris Williams Jr., Professor of Religion and Society and Director of the J.M. Ormond Center*, B.A. (Wofford College), B.D. (Duke University), Ph.D. (Princeton Theological Seminary), D.D. (Wofford College).



Dr. Carroll is known for using sociological methods to aid the church's understanding of its relation to society. An ordained United Methodist minister, Carroll served a Methodist chaplaincy at Duke University from 1961 to 1965, taught at Emory University and Hartford Seminary, and is a member of the Western North Carolina Conference.

Dr. Carroll's scholarship encompasses five distinct, yet related areas of research: congregational studies, the nature and practice of ministry, women in ministry, main-line Protestantism, and theological education. His numerous books and articles, many of which are collaborations with other authorities in the field, illustrate his focus on these concerns. Dr. Carroll is the author of several books, including *As One with Authority*, *Women of the Cloth, Carriers in Faith: Lessons from Congregational Studies*, and *Handbook of Congregational Studies*, that have impacted upon local congregations and scholars.

**James L. Crenshaw**, *Robert L. Flowers Professor of Old Testament*, B.A. (Furman University); B.D. (Southern Baptist Theological Seminary); Ph.D. (Vanderbilt University); D.D. (Furman University).



Professor Crenshaw's academic interests are in literary and theological interpretations of the Hebrew Bible. He teaches courses on biblical theology, wisdom and prophetic literature, prayer in the Old Testament, narrative art in the Hebrew Bible, the problem of evil, Job, Ecclesiastes, Proverbs, and introduction to the literature and history of ancient Israel. Among his publications are *Prophetic Conflict*, *Samson*, *Old Testament Wisdom*, *A Whirlpool of Torment*, *Ecclesiastes*, and *Story and Faith*. His most recent works include *Joel and Urgent Advice and Probing Questions*. A former editor of the *Society of Biblical*

*Literature* monograph series, he currently edits a series, *Personalities of the Old Testament*. A Baptist minister, he has been active in Baptist and Christian (Disciples of Christ) churches for over three decades.

**Susan J. Dunlap**, *Assistant Professor of Pastoral Theology*, B.A., (University of California, San Diego); M.Div., Ph.D. (Princeton Theological Seminary); Th.M. (Duke University).



An ordained minister of the Presbyterian Church (U.S.A.), Dr. Dunlap brings to her academic work six years of parish ministry. Her dissertation at Princeton, *Pastoral Care and Counseling of Depressed Women*, utilized the theory of French scholar Michel Foucault to demonstrate how depression arises out of social and political power constructs. She sees her work in pastoral care as a move toward establishing a cognitive model of therapy rather than psychodynamic or psychoanalytic schools of thought, as a primary conversation partner in pastoral counseling.

**James Michael Efird**, *Professor of Biblical Interpretation*, A.B. (Davidson College); M.Div. (Louisville Presbyterian Theological Seminary); Ph.D. (Duke University).



Having served on the Duke Divinity School faculty since 1962, Professor Efird has concentrated on making biblical scholarship understandable and useful for men and women preparing primarily for parish ministry. In addition, he has taken this approach to the laity of the Church in many different denominations. Professor Efird's teaching, research, and writing cover the broad spectrum of both the Old and the New Testaments and are reflected in thirteen books and in over fifty articles in various journals and Bible dictionaries.

**Gayle Carlton Felton**, *Assistant Professor of Christian Nurture*, B.A. (North Carolina Wesleyan College); M.Div. (Duke University); Ph.D. (Duke University).



Professor Felton specializes in the teaching ministry of the Church. In addition to Christian education, her academic interests include women's studies, Methodism, and American Christianity. Her current research is in the theology and practice of baptism, and she serves as a member of the General Commission on Baptism of the United Methodist Church. She is an ordained ministerial member of the North Carolina Conference and a member of the Board of Trustees of North Carolina Wesleyan College. She is the author of *This Gift of Water*.



**Albert F. Fisher**, Adjunct Professor of Parish Work. A.B. (Duke University); B.D. (Duke University); D.D. (North Carolina Wesleyan College).



Albert Fisher has been with the Rural Church Division of The Duke Endowment since 1974, serving as director since 1977. As director of the Rural Church Division, he is responsible for making requests to the Trustees of The Duke Endowment from eligible beneficiaries. Many of the grants made through the Rural Church Division are made to Duke Divinity School or to students in the Divinity School who serve as student pastors or assistant pastors in rural United Methodist churches in North Carolina.

Prior to joining The Duke Endowment, Professor Fisher was a pastor and a district superintendent in the North Carolina Conference. He is a member of the Board of Visitors of Duke Divinity School, a past president of the Divinity School Alumni Association, and a past president of the Duke University General Alumni Association.

**Mary McClintock Fulkerson**, Associate Professor of Theology. B.M. (University of North Carolina at Chapel Hill); M.Div. (Duke University); Ph.D. (Vanderbilt University).



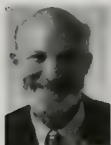
Professor McClintock Fulkerson's primary teaching interests are contemporary Protestant theology, authority in theology, ecclesiology, and feminist theologies, as well as nineteenth-century German Protestant thinkers. Her current research and publishing is in feminist theologies. She has published in such journals as *Journal of the American Academy of Religion* and *Journal of Feminist Studies in Religion*. Professor McClintock Fulkerson has served on the New Hope Presbyterian Examination Committee and currently serves on the National Task Force on Theology and Practice of Ordination of the Presbyterian Church (U.S.A.).

**Miriam Anne Glover-Wetherington**, Assistant Professor in Pastoral Care. A.B. (Duke University); M.Div. (Harvard University); M.A. (Wake Forest University); Ph.D. (Southern Baptist Theological Seminary).



An ordained Baptist minister, Miriam Anne Glover-Wetherington served two churches in Virginia and was a hospital chaplain in Columbia, South Carolina. Her research has focused on how unconscious prejudice can enter into counseling through a failure to recognize underlying presuppositions. She recently completed her dissertation, "The Significance of Systematic Paradigms for Pastoral Counseling with Women, M.Div. Seminarians."

**Stanley M. Hauerwas**, Gilbert T. Rowe Professor of Theological Ethics. B.A. (Southwestern University); B.D., M.A., M.Phil., Ph.D. (Yale University); D.D. (University of Edinburgh).



Professor Hauerwas works in the field of theological ethics where he has sought to recover the significance of the virtues for understanding the nature of the Christian life. This has led him to emphasize the importance of the Church as well as narrative for understanding the nature of Christian existence. His work has been characterized by cutting across disciplinary lines as he is in conversation with systematic theology, philosophical theology, philosophical ethics, and political theory, as well as the philosophy of social science. He has published several books, but perhaps the best known

are *The Peaceable Kingdom*, *A Community of Character*, and (with Will Willimon) *Resident Aliens: Life in the Christian Colony*. His most recent book is *After Christendom?* He lectures widely to church and academic audiences, but his work clearly indicates that his fundamental interest is in the upbuilding of moral discourse within the contemporary Christian community.

**Richard B. Hays**, Professor of New Testament. B.A. (Yale University); M.Div. (Yale University); Ph.D. (Emory University).



Professor Hays, who is noted for his work in the fields of Pauline theology and New Testament ethics, has focused attention on the theologically innovative ways in which the New Testament writers employed Israel's Scripture. He is the author of three books: *Echoes of Scripture in the Letters of Paul*, *The Faith of Jesus Christ*, and the forthcoming *New Testament Ethics: Community, Cross, New Creation*. He has also published numerous articles and reviews in scholarly journals, including the *Journal of Biblical Literature* and the *Journal of Religious Ethics*. He formerly chaired the Pauline Epistles Section of the Society of

Biblical Literature, and he currently serves on the Editorial Boards of the *Journal of Biblical Literature* and of *New Testament Studies*. Professor Hays is an ordained United Methodist minister in the North Georgia Conference.

**Richard Heitzenrater**, *Professor of Church History and Wesley Studies*, B.A., M.Div., Ph.D., (Duke University).



Dr. Heitzenrater is acknowledged as the major Wesley scholar of his generation. Best known for his discovery of the "key" to Wesley's Oxford diaries, Heitzenrater's breakthrough illuminates the importance of the Oxford period for Wesley's life and work, and continues to shape the course of Wesley studies. Professor Heitzenrater comes to Duke from the Perkins School of Theology at Southern Methodist University (SMU), where he was Albert C. Outler Professor of Wesley studies. At Duke, Dr. Heitzenrater continues as general editor and director of the Wesley Works Project, an international publishing venture that has yielded thirteen of an intended thirty-five volumes on Wesley's writings. Professor Heitzenrater's own contribution to the Wesley Works Project is his edition of four volumes for the *Journals and Diaries*, important tools for general historians of the eighteenth century. Heitzenrater is author of *Diary of an Oxford Methodist: Benjamin Ingham, 1733-1734*, the two-volume *The Elusive Mr. Wesley, Mirror and Memory: Reflections on Early Methodism*, and the forthcoming book, *Wesley and the People Called Methodist*.

**Ann I. Hoch**, *Director of Student Life and Associate Director of Field Education*. B.A. (Austin College); M.Div. (Austin Presbyterian Theological Seminary); Ph.D. (Princeton Theological Seminary).



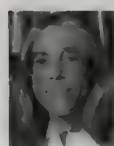
An ordained Presbyterian minister, Ann Hoch completed the Ph.D. in homiletics at Princeton Theological Seminary. A graduate of Austin Presbyterian Theological Seminary in Austin, Texas, she served two pastorates before returning to Austin as dean of students and director of admissions. While at Princeton she served a church in rural New Jersey, taught preaching, and worked as coordinator of student financial aid.

**Willie J. Jennings**, *Assistant Professor of Theology and Black Church Studies*. B.A. (Calvin College); M.Div. (Fuller Theological Seminary); Ph.D. (Duke University).



Willie Jennings' teaching and research include systematic and philosophical theology. He also teaches in black, liberation, and Third World theologies and black church studies. Mr. Jennings is a native of Michigan and an ordained Baptist minister. He recently has served as interim minister of a Presbyterian church in Oxford, North Carolina.

**Susan A. Keefe**, *Associate Professor of Church History*, B.A. (University of Pennsylvania); M.A., Ph.D. (University of Toronto).



A church historian and specialist in the study of Carolingian manuscripts, Professor Keefe has taught at Duke since 1988. Her work over the past ten years has involved textual criticism of Carolingian clergy manuals, especially as they relate to the practice of baptism. She is recognized by scholars internationally for her skill in theology and interpretation as well as in paleology, codicology, and philology. She has travelled extensively throughout Europe, especially in France, visiting remote libraries, churches, and monasteries in search of original manuscripts. Her book, *Water and the Word—Baptism and the Instruction of the Clergy in the Carolingian Empire: A Study of Texts and Manuscripts*, is forthcoming from the University of Notre Dame Press.

**Thomas A. Langford**, *William Kellon Quick Professor of Theology and Methodist Studies*. B.A. (Davidson College); B.D., Ph.D. (Duke University); D.D. (Davidson College).



Professor Langford's academic interests are in systematic and philosophical theology, in British theology, and in theology in the Wesleyan tradition. His explorations focus on the relation of theology to culture. *Philosophy of Religion, Intellect and Hope, Practical Divinity, Christian Wholeness, Prayer and the Common Life*, and *Theology in the Wesleyan Tradition: A Sourcebook* are among his publications. His activity in the university as provost and in the United Methodist Church also reflects his interests. He helped write the section on ministry in *The Book of Discipline of the United Methodist Church* and is the principal author of the current statement on the mission of the church. An elder in the Western North Carolina Conference, he has served as a delegate to Jurisdictional and General Conferences since 1972. Dr. Langford was dean of the Divinity School 1971-1981.



**William B. Lawrence**, *Professor of the Practice of Christian Ministry*. A.B. (Duke University); M.Div. (Union Theological Seminary); M.Phil., Ph.D. (Drew University).



Dr. Lawrence is an ordained United Methodist minister in the Wyoming Conference (Pennsylvania). Dr. Lawrence has served pastoral appointments in New York and Pennsylvania and was most recently superintendent of Wilkes-Barre District. He has published articles in the *Dictionary of Christianity in America*, *Quarterly Review*, *Fifty Popular Leaders in American Religion*, and *Biblical Preaching Journal*. His current research interest centers on the tension between autocratic and consensus models of church leadership, especially as embodied in John Wesley. He is associate director of the J. M. Ormond Center for Research, Planning, and Development.

**Richard Lischer**, *Professor of Homiletics*. B.A. (Concordia Senior College); M.A. (Washington University); B.D. (Concordia Seminary); Ph.D. (University of London).



A native of St. Louis, Professor Lischer's graduate theological training is in systematic theology. He is an ordained minister in the Evangelical Lutheran Church in America and has nine years of pastoral experience in rural and suburban settings. He teaches in the areas of homiletics and ministry. In his scholarly work Dr. Lischer has sought to portray proclamation as an integrated theological activity. He has published widely in the areas of theology, ministry, and preaching. His earliest book is a study of Christian anthropology, *Marx and Teilhard: Two Ways to the New Humanity*. *A Theology of Preaching and Theories of Preaching* deal with the theological and rhetorical bases of preaching. *Speaking of Jesus* reflects his parish experiences with grassroots evangelism. His new book *Preacher King: Martin Luther King, Jr. and a Word that Moved America* is a rhetorical and theological study of Martin Luther King, Jr. He is also the coeditor of the *Concise Encyclopedia of Preaching*.

**Roger L. Loyd**, *Professor of the Practice of Theological Bibliography*. B.A. (McMurry College); M.Th. (Southern Methodist University); M.L.S. (North Texas State University).



Professor Loyd came to us from Perkins Theological Seminary, where he was associate librarian and assistant professor of theological bibliography for eleven years. An ordained United Methodist minister, Loyd has served pastoral and campus ministry appointments. He is the editor of *A History of the Perkins School of Theology* by Lewis Howard Grimes.

**Keith G. Meador**, *Associate Clinical Professor of the Practice of Pastoral Care*. B.A. (Vanderbilt University); M.D. (University of Louisville); Th.M. (Duke University); M.P.H. (University of North Carolina at Chapel Hill).



A physician and board certified psychiatrist, Dr. Meador has served on the faculties of the School of Medicine and Divinity School at Vanderbilt University and Duke University. His joint appointment in the Divinity School and the School of Medicine builds on his clinical, research, and teaching background in religion and psychiatry. The confluence of his training in public health, aging and human development, and theology has led to numerous publications and national presentations regarding religion, aging, and mental health. He lectures regularly to groups in the Christian community regarding mental health, pastoral care, and the Church. He is a member of the Group for the Advancement of Psychiatry-Psychiatry and Religion Committee and is an active member of the Presbyterian Church (U.S.A.).

**Priscilla Pope-Levison**, *Assistant Professor of the Practice of Evangelism*. B.Mus. (DePauw University); M.Div. (Duke University); Ph.D. (University of St. Andrews).



Professor Pope-Levison's research focuses both on evangelism and christology in context. Her book, *Evangelization from a Liberation Perspective*, was selected by the *International Bulletin of Missionary Research* as one of fifteen outstanding books for mission studies in 1991. Her most recent book is *Jesus in Global Contexts*, coauthored with John R. Levison. Since 1987, Dr. Pope-Levison has been assistant editor of *Catalyst*, a periodical on "contemporary evangelical perspectives" published for United Methodist seminarians. In the American Academy of Religion, she serves on the steering committee of the evangelical theology group, and as co-chair of the evangelical feminist theology section. Dr. Pope-Levison previously taught at North Park Theological Seminary.

**Jefferson Powell**, *Professor of Law and Divinity, jointly with the Law School. B.A. (St. David's University College in Wales); M.Div., J.D. (Yale University); A.M., Ph.D. (Duke University).*



Professor Powell's teaching and research interests in the Divinity School are in Christian theological ethics and in the theological interpretation of contemporary society. His legal publications have been primarily in American constitutional history and theory and include a book, *Languages of Power* (1991). He is a lay Episcopalian and a parishioner at the Chapel of the Cross, Chapel Hill.

**Russell E. Richey**, *Associate Dean for Academic Programs and Professor of Church History. B.A. (Wesleyan University); B.D. (Union Theological Seminary); M.A., Ph.D. (Princeton University).*



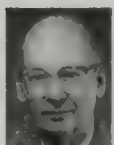
Professor Richey is codirector, with Dennis Campbell, of the Lilly Endowment-sponsored project on "United Methodism and American Culture." He teaches in American Christianity and American Methodism. His most recent books are *Early American Methodism*, *Perspectives on American Methodism*, *Reimagining Denominationalism*, and the *Methodist Conference in America*. Professor Richey is an elder in the North Carolina Conference of the United Methodist Church and a member of the General Commission on Archives and History.

**B. Maurice Ritchie**, *Associate Dean for Student Life and Director of Field Education. B.A. (Davidson College); B.D. and Th.M. (Duke University).*



The Reverend B. Maurice Ritchie specializes in the practice of ministry and the training of persons for ministry in parishes, institutions, chaplaincies, and a variety of other settings. His own experience includes service as a parish minister, as college chaplain, and as a professor at the undergraduate level. He previously served the Divinity School as director of admissions and student affairs. He is an elder in the Western North Carolina Conference and a member of the Board of Ordained Ministry of that Conference and of the Southeastern Jurisdiction.

**Dwight Moody Smith**, *George Washington Ivey Professor of New Testament. B.A. (Davidson College); B.D. (Duke University); M.A., Ph.D. (Yale University); Litt. D. (Davidson College).*



Professor Smith's *Composition and Order of the Fourth Gospel* appeared in 1965. Subsequently, his contributions to Johannine scholarship have taken the form of articles, essays, and reviews, the most notable of which were published in *Johannine Christianity*. His textbook, with Robert A. Spivey, *Anatomy of the New Testament*, is currently in its fifth revised edition. *John*, in the Proclamation Commentaries Series, appeared in a revised edition in 1986. He has published *Interpreting the Gospels for Preaching*, as well as articles in the *Interpreter's Dictionary of the Bible*, *Harper's Bible Dictionary*, and Macmillan's *Encyclopedia of Religion*. He has been a postdoctoral fellow of the Lilly Foundation (Zurich Foundation), the Guggenheim Foundation (Cambridge University), the Association of Theological Schools, and the Center for Theological Inquiry (Princeton). From 1960 to 1965, he taught at the Methodist Theological School in Ohio. He is an elder in the South Carolina Annual Conference.

**Harmon L. Smith**, *Professor of Moral Theology and Professor of Community and Family Medicine. B.A. (Millsaps College); B.D., Ph.D. (Duke University).*



Professor Smith's teaching centers in systematic Christian ethics and medical ethics. His principal research interests are in ethical method, decision theory, and ethics and medicine. He has been a visiting professor in several universities both here and abroad, and has lectured in more than 150 colleges and universities, and more than 75 hospitals and medical schools, in the U.S., Canada, and Europe. His most recent book is *Professional Ethics and Primary Care Medicine* (with Larry Churchill). He is a priest of the Episcopal Church, canonically resident in the Diocese of North Carolina.



**David C. Steinmetz**, *Amos Ragan Kearns Professor of the History of Christianity*. B.A. (Wheaton College); B.D. (Drew University); Th.D. (Harvard University).



Professor Steinmetz is a specialist in the history of Christianity in the late Middle Ages and Reformation. Before coming to Duke in 1971, he taught at Lancaster Theological Seminary of the United Church of Christ. In 1977, he was a visiting professor at Harvard University and a Guggenheim Fellow at Cambridge University. A former president of the American Society of Church History (1985), he has written numerous books and articles in his field, including *Luther and Staupitz*, *Luther in Context*, and *Memory and Mission: Theological Reflections on the Christian Past*.

He is a United Methodist minister and a member of the North Carolina Conference.

**James L. Travis III**, *Clinical Professor of Pastoral Care*. B.A. (Mississippi College); B.D., Th.M. (Southern Baptist Theological Seminary); Ph.D. (Emory University).



Professor Travis' clinical and academic interests have combined over twenty-five years of pastoral care and education in psychiatric and general hospitals. Earlier publications address issues such as New Testament implications for pastoral care and counseling, and liturgical worship in a psychiatric hospital. Certified as a chaplain supervisor by the Association for Clinical Pastoral Education, he is interested in the formation and development of persons in the pastoral role, medical ethics, and pastoral care. His research interests include the relationship of pastoral care to health care and the measurement of objectives in CPE programs. Dr. Travis is chaplain to Duke University Hospital and director of pastoral services at Duke University Medical Center.

**Karen B. Westerfield Tucker**, *Assistant Professor of Liturgics*. B.A. (Emory and Henry College); M.Div. (Duke University); M.A., Ph.D. (University of Notre Dame).



An elder in the United Methodist Church, Dr. Westerfield Tucker has served as a local church pastor and as a campus minister in the Central Illinois Conference. She is also a trained musician, and has served as a church organist and choir director. Her academic interests include Methodist liturgical history and theology, the pastoral dimensions of the liturgy, and hymnody. She is the editor of the *Proceedings of the North American Academy of Liturgy* and is an assistant editor for the ecumenical and international journal *Studia Liturgica*. She commissioned and compiled *The*

*Sunday Service of the Methodists: Twentieth-Century Worship in Worldwide Methodism* (1996). A member of the World Methodist Council, she is also a liturgical consultant to that group.

**William C. Turner, Jr.**, *Associate Professor of the Practice of Homiletics*. B.S., M.Div., Ph.D. (Duke University).



Professor Turner held positions within Duke University in student affairs and Afro-American Studies and as director of the Black Church Affairs Office at the Divinity School before joining the Divinity School faculty. His ongoing work focuses on pneumatology and the tradition of spirituality and preaching within the black church. Articles on "Black Evangelicalism," "The Musicality of Black Preaching," and "The Black Church and the Ecumenical Tradition" reflect his teaching and writing interests. Professor Turner travels widely as a preacher and lecturer. He

retains active involvement in church and community activities.

**Grant Wacker**, *Associate Professor of the History of Religion in America*. B.A. (Stanford University); Ph.D. (Harvard University).



Grant Wacker joined the Divinity School faculty after teaching in the Department of Religious Studies at the University of North Carolina at Chapel Hill from 1977-1992. An exceptional scholar and writer, he has pioneered studies of evangelical and pentecostal Christianity. He is the author of two books, *Augustus H. Strong and the Dilemma of Historical Consciousness* and *Heaven Below: Primitive Pentecostalism in America*. He is working on a new book, tentatively titled *But Why Christianity? The American Protestant Encounter with World Religions*. It will examine how thoughtful men and women grapple with the premise of absolutism in Christianity, given exposure to experiences of faithfulness in other religions.

**Geoffrey Wainwright**, *Robert Earl Cushman Professor of Christian Theology*. B.A., M.A., B.D., D.D. (Cantab.); Dr. Theol. (University of Geneva).



A minister of the British Methodist Church, Dr. Wainwright taught theology in Cameroon, West Africa (1967-73), Birmingham, England (1973-79), and Union Theological Seminary, New York (1979-83). He is author of *Eucharist and Eschatology* and of *Doxology*, and an editor of *The Study of Liturgy* and *The Study of Spirituality*. He was a member of the Faith and Order Commission of the World Council of Churches and currently chairs the international dialogue between the World Methodist Council and the Roman Catholic Church. His churchly interests are reflected in his books, *The Ecumenical Moment* and *Wesley and Calvin as Sources of Theology, Liturgy, and Spirituality*. He teaches across the entire range of Christian doctrine and is particularly interested in the truth claims of faith and theology.

**Brett Webb-Mitchell**, *Assistant Professor of Christian Nurture*. B.Mus. Therapy (University of Kansas); M.Div. (Princeton Theological Seminary); Th.M. (Harvard University); Ph.D. (University of North Carolina-Chapel Hill).



Professor Webb-Mitchell's teaching interest has focused on the practices of educating Christians, practices which are theologically, biblically, historically, and theologically laden. Ordained a minister in the Presbyterian Church (USA), he has worked in various church settings, as well as in diverse circumstances with people with disabilities. Along with numerous articles that have been published, he has also published two books on the church and persons with disabilities, *God Plays Piano, Too: The Spiritual Lives of Disabled Children and Unexpected Guests at Gods Banquet: Welcoming People with Disabilities into the Church*.

**William H. Willimon**, *Professor of Christian Ministry*. B.A. (Wofford College); M.Div. (Yale University); S.T.D. (Emory University); D.D. (Westminster College).



Professor Willimon teaches courses in preaching and worship in addition to his duties as dean of Duke University Chapel. Before coming to Duke, he served as pastor in churches in Georgia and South Carolina. His research and publication includes work in liturgics, homiletics, and pastoral care. He is the author of over thirty-two books, two of which have been selected by the Academy of Parish Clergy as "the most useful book for pastors" in the year in which they were published. He has served the Church as an editor of new worship resources, curriculum writer, and as a member of the United Methodist Commission on Worship. He is on the editorial board of three professional journals, including *Quarterly Review* and the *Christian Century*, and has lectured in the United States, Korea, and Europe. He is an elder in the South Carolina Conference of the United Methodist Church.

## New Faculty

**Elizabeth LaRocca-Pitts**, *Assistant Professor of Old Testament*. B.A. (Duke University); M.Div. (Garrett-Evangelical Seminary); Ph.D. (Harvard University).



Dr. Pitts, an ordained elder in the North Georgia conference of the United Methodist Church, has special areas of interest in the study of ancient Israelite religion and the intersection of the biblical text with the archaeological record. She has held diverse appointments including a rural four-point charge, an inner-city youth agency, and an associateship at a 2,000 member church. She has served as an adjunct professor at Andover Newton Theological School, the Candler School of Theology at Emory University, and the University of Georgia.





*Admissions*





## FREQUENTLY CALLED TELEPHONE NUMBERS

|                        |              |
|------------------------|--------------|
| Switchboard            | 919-660-3400 |
| Admissions             | 660-3436     |
| Black Church Affairs   | 660-3444     |
| Cokesbury Bookstore    | 660-3417     |
| Communications         | 660-3412     |
| Continuing Education   | 660-3448     |
| Deans Office           | 660-3434     |
| Development            | 660-3456     |
| Field Education        | 660-3440     |
| Financial Aid          | 660-3442     |
| Library                | 660-3450     |
| Registry/Academic Dean | 660-3428     |

## Requirements and Procedures

The Divinity School is a fully accredited member of the Association of Theological Schools and is one of thirteen accredited seminaries of the United Methodist Church. It considers candidates for admission who hold an A.B. degree, or its equivalent, from a college approved by a regional accrediting body.

**Preseminary Curriculum.** The Divinity School follows the guidelines of the Association of Theological Schools with respect to undergraduate preparation for theological study. In general, this means a strong background in liberal arts, especially the humanities. A well-rounded background in English language and literature, history, philosophy, psychology, religion, social science, and foreign languages is especially desirable.

**Application Procedures for Master of Divinity and Master in Church Ministries.** Application forms, secured from the admissions office, should be filed six to twelve months in advance of the intended date of enrollment. Completed applications (application and all supporting credentials) must be received in the admissions office by 5 p.m. April 1 for August enrollment and 5 p.m. November 1 for January enrollment. Offers of admission for the M.Div. and M.C.M. programs are made on a rolling admissions basis. When an application is completed and ready for committee, an admission decision should be reached, under normal circumstances, within two weeks.

The student should provide the following supporting documents and information: (1) one copy of the official transcript from each college, university, or seminary attended sent by the institution directly to the director of admissions; (2) one supplementary transcript, sent as soon as possible, showing completion of work that was in progress when the earlier transcript was made; and (3) the names of five persons who are best qualified to judge the applicant as a prospective student in the Divinity School and who will be contacted by the applicant for written letters of recommendation. Of these five

references, two should be academic, two should be church (home pastor and a denominational official) and one should be a general character reference.

*Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant. A nonrefundable \$25 application fee must accompany the application, and the application cannot be processed without this fee. An application processing fee waiver is not available. Applicants are strongly urged to come for on-campus visits and interviews prior to final admission.*

**Admission Requirements.** Those persons are encouraged to apply:

1. who have or will have been awarded a bachelor's degree from a regionally accredited college or university prior to their intended date of enrollment;
2. who have attained at least an overall B- (2.7 on 4.0 scale) academic average; and
3. who are committed to some form of ordained or lay ministry.

*Applicants are evaluated on the basis of academic attainment, future promise for ministry, and vocational clarity and commitment.*

**Admission on Limited Program.** Limited program is a special relation between the school and the student, designed to encourage and support academic achievement. Students may be admitted on limited program for a number of reasons, including an undergraduate degree in a program other than liberal arts or an undergraduate transcript that does not fully meet Divinity School standards.

Limited program means reduced schedules of work, with the amount determined by the associate dean for academic programs (ordinarily no more than three courses each of the first two semesters), and also includes a review of work at the end of each semester by the Committee on Academic Standing until limited program status is lifted.

**Application Procedures for Master of Theological Studies Program.** Application forms, which can be secured from the admissions office, should be filed seven to twelve months in advance of the intended date of enrollment. Completed applications (including all supporting credentials) must be received in the admissions office by 5 p.m. February 1 for August enrollment. Enrollment for the M.T.S. program is competitive, with a maximum of fifteen to twenty students enrolling each August. Offers of admission for the August M.T.S. class are announced on February 26. (Any August enrollment M.T.S. application received before the February 1 deadline but not completed until after the deadline will be considered for admission on a wait list basis only.)

The student should provide the following supporting documents and information: (1) one copy of the official transcript from each college, university, or seminary attended sent by the institution directly to the director of admissions; (2) one supplementary transcript, sent as soon as possible, showing completion of work that was in progress when the earlier transcript was made; (3) the names of two college (or seminary) professors who are best qualified to judge the applicant as a prospective student in the Divinity School and who will be contacted by the student for written letters of recommendation; (4) the names of two persons willing to serve as general character references who will be contacted by the student for a written letter of recommendation; and (5) the name of one person who will serve as a church reference.

*Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant. A nonrefundable \$25 application fee must accompany the application, and the application cannot be processed without this fee. An application processing fee waiver is not available. Applicants are strongly urged to come for on-campus visits and interviews prior to final admission.*

**Admission Requirements.** Those persons are encouraged to apply for the M.T.S.:

1. who have been awarded a bachelor's degree from a regionally accredited college or university prior to their intended date of enrollment;
2. who have attained at least an overall *B* (3.0 on a 4.0 scale) academic average; and
3. who demonstrate program goals commensurate with this degree program.
4. where applicable, who are committed to some form of diaconal or lay ministry.

**Application Procedures for Master of Theology Program.** Application forms, which can be secured from the admissions office, should be filed six to twelve months in advance of the intended date of enrollment. Completed applications (application and all supporting credentials) must be received in the admissions office by 5 p.m. April 1 for August enrollment and 5 p.m. November 1 for January enrollment. Offers of admission for the Th.M. program are made on a rolling admissions basis. When an application is completed and ready for committee, an admission decision should be reached, under normal circumstances, within two weeks.

The student should provide the following supporting documents and information: (1) one copy of the official transcript from each college, university, or seminary attended sent directly to the director of admissions by the institution; (2) one supplementary transcript, sent as soon as possible, from the seminary showing completion of work that was in progress when the earlier transcript was made; (3) the names of three seminary professors who are best qualified to judge the applicant as a prospective student in the Divinity School and who will be contacted by the student for written letters of recommendation, and (4) the name of one denominational official qualified to appraise the applicant's ministerial work who will be contacted by the student for a written letter of recommendation.

*Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant. A nonrefundable \$25 application fee must accompany the application, and the application cannot be processed without this fee. An application processing fee waiver is not available. Applicants are strongly urged to come for on-campus visits and interviews prior to final admission.*

**Admission Requirements.** Those persons are encouraged to apply for the Th.M.:

1. who have been awarded a bachelor's degree from a regionally accredited college or university;
2. who have or will have been awarded the M.Div. degree (or the equivalent) from an accredited theological institution;
3. who have attained at least an overall *B* (3.0 on a 4.0 scale) academic average in their foundational theology degree
4. who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study.

*Other than one scholarship per year for an international student and one Parish Ministry Fund scholarship per year for a student from either the Western North Carolina or North Carolina Conference, Master of Theology students are not eligible for any form of financial assistance through the Divinity School. Applicants are strongly urged to come for on-campus visits and interviews prior to final admission.*

**Policies and Procedures for International Students.** In recognition of the invaluable contributions that students from outside the United States bring to theological discourse and to community life, Duke Divinity School welcomes all fully qualified international students to apply for all degree programs. Although applications from international students are accepted for all degree programs, the Divinity School prefers, due to the contextual nature of ministry to a congregation and our commitment to the



needs of the world church, that students pursue the Master of Divinity and the Master of Religious Education degrees in their respective home countries or regions.

International students must, in addition to the information required of all students, submit the following with the application materials: (1) If the student's native language is not English, certification of English proficiency must be demonstrated by scores from the Test of English as a Foreign Language (TOEFL). *Applicants to the M.Div. and M.R.E. degrees must also submit scores from the Test of Spoken English (TSE).* Both tests are administered through the Educational Testing Service in Princeton, New Jersey. The Divinity School requires a score of 580 or higher on the TOEFL and 260 or higher on the TSE. An international student who completes an undergraduate degree at an accredited college/university in the United States may be allowed to waive these tests. (2) A statement of endorsement must be sent from an official (bishop, general secretary, etc.) of the student's native ecclesiastical body, affirming that ecclesiastical body's support for the student's pursuit of theological studies in the United States and welcoming the student into active ministry under its jurisdiction following the student's study in this country. (3) The Divinity School must have a statement demonstrating financial arrangements for the proposed term at the Divinity School. (Estimated minimum expenses per academic year for a single international student are \$20,074.\* Living costs for additional family members should be figured on the basis of a minimal \$400 per month for spouse and \$260 per month per child.)

**Admission as a Special Student.** Special student status is a restricted category of admission for persons who do not have need of a degree program and who desire access to the rich offerings of the Divinity School curriculum for particular purposes (courses are taken for credit). Special student status may be granted after a person has submitted an application and all transcripts of undergraduate academic work and when all three letters of recommendation have been received from listed references. Completed applications (application and all supporting credentials) for special student status must be submitted by July 1 for August enrollment and December 1 for January enrollment. Special students are ineligible for any form of financial assistance through the Divinity School.

**Admission Acceptance.** Applicants are expected to indicate their acceptance of admission within three weeks of notification and to confirm this with the payment of a non-refundable admission fee of \$50. Upon matriculation, this fee is applied to the first semester tuition charge.

To complete admission, students must provide a certificate of immunization and general health to the student health service. The admissions office must also receive a final transcript verifying the conferral of the undergraduate (for the M.Div., M.T.S. and M.C.M.) or seminary (for the Th.M.) degree.

Persons who do not matriculate at the time for which they were originally admitted forfeit admission unless they present a written request for deferral to the director of admissions. The application will then be placed in the deferred file, active for one calendar year. Deferrals of admission for the M.T.S. degree program are not permitted.

**Transfer of Credit.** Transfer of credit from theological schools accredited by the Association of Theological Schools is allowed by the Divinity School towards the Master of Divinity, Master of Religious Education, and Master of Theological Studies degrees. Credit from another institution will normally be limited in the M.Div. and M.C.M. programs to one-third of the total number of credits required for graduation by the Divinity School (and to one-quarter for the M.T.S.). *Theological courses completed more than five years prior to the intended date of enrollment will not be considered for transfer credit.*

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\*Figures are based on 1995-96 charges and are subject to change.

A student applying for a transfer from another seminary must include the following with the required application materials: (1) a statement of explanation and purpose for the proposed transfer; (2) a letter of honorable dismissal written by the dean or president of the seminary from which transfer is sought; and (3) a letter of recommendation written by the director of either field education or student life of the seminary from which transfer is sought. Applicants for transfer into a degree program are evaluated on the same basis as other applicants.

## **Conduct of Students**

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct. The university wishes to emphasize its policy that all students are subject to the rules and regulations of the university currently in effect, or which are put into effect from time to time by the appropriate authorities of the university. Any student, in accepting admission, indicates willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the university to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the university.

The Divinity School expects its students to participate in a communally shared concern for growth in life appropriate to Christian faith and to the dignity of their calling.

## **Readmission to Duke Divinity School**

Persons seeking readmission to the Divinity School's degree programs must complete the following requirements: (1) submit a new application; (2) submit an additional statement detailing reasons for withdrawal and reasons for seeking readmission at this time, and describing activities and employment undertaken since withdrawal; (3) submit the names of at least three persons willing to serve as references who will be contacted by the student, one of which must be an ecclesiastical official; and (4) transcripts of all academic work undertaken since withdrawal from the Divinity School.

These new materials, supplemented by the individual's original application and Divinity School academic and field education files, will be reviewed by the members of the Admissions Committee for an admission decision. An interview with the director of admissions prior to the processing of the application for readmission is encouraged and may be required. Any questions about readmission procedures should be addressed to the director of admissions. Applications for readmission will be evaluated on the basis of academic attainment, future promise for the ministry, and vocational clarity and commitment.

*Community Life*

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## Corporate Worship

One of the most important aspects of training for Christian life is vigorous, inspiring, and varied participation in corporate worship. This corporate life of the Divinity School is centered in York Chapel where three services are held weekly: a service of word on Tuesday and Wednesday, and a service of word and table on Thursday. Faculty members, administrators, and students share joint responsibility for these services that express the variety and diversity of theological and liturgical traditions represented in the community. These chapel services are followed by a fellowship time in the student lounge where students, faculty, administrators, support staff, spouses and children, and visitors gather for refreshments and conversation.

The Divinity School enjoys a particularly close relationship with Duke Chapel. Throughout the year, Divinity School administrators and faculty, as well as guests of national and international stature, preach at Sunday morning worship services. Each year many of our students join the 200-plus member Duke Chapel Choir that provides choral music on Sunday mornings and special music programs throughout the academic year, including an annual Christmas performance of Handel's *Messiah*. Divinity students and faculty also contribute to the leadership of the ministry of Duke Chapel by chairing and serving on standing committees: Faith and the Arts, Supportive Ministries, Worship, Prophetic Concerns, and Leadership and Development.

## Student Activities and Organizations

"We the students of the Divinity School of Duke University covenant together to be a community of faith under the Gospel of Jesus Christ. We seek to be faithful to the Gospel, to live a life of grace and justice, and to make known to the world the love of God for the world" (Preamble, *Constitution of the Student Association*). In the absence of common living and dining accommodations, community life in the Divinity School centers around a number of organizations and activities.

**The Student Association.** The officers of the Student Association are elected and serve as an executive committee for conducting the business of the Representative Assembly.

The purpose of the association is to channel the interests and concerns of Divinity School students to the following ends:

1. to express itself as a community of faith in witness and fellowship;
2. to provide student programs, activities, and services;
3. to collect and raise money, through dues and other channels, to help accomplish these purposes.

Several standing association groups exist whose major purpose is to provide students with opportunities to express and share personal, professional, and spiritual development with each other.

**Athletics and Recreation.** A person is selected from the student body to coordinate the Divinity School's participation in Duke University intramural sports. This person is a member of the Student Representative Association, which helps support athletic teams and recreational events with finances and publicity.

**Black Seminarians' Union.** This is an organization for students whose major purposes are to insure the development of a theological perspective commensurate with the Gospel of Jesus Christ and relevant to the needs of black seminarians and the black church, in order to improve the quality of life academically, spiritually, politically, and socially in the Divinity School.

**Christian Educators Fellowship.** As a professional organization for persons who serve or intend to serve as professional Christian educators, C.E.F. interprets the role of the Christian educator in the total ministry of the Church and provides support, fellowship, and professional relationships. In addition to monthly program meetings, a Christian education emphasis week is held each spring.

**Christian Social Action Committee.** A committee of the Student Representative Assembly, Christian Social Action serves as a forum through which persons explore what it means to live out the Gospel in a social context as witnesses of Christ. The organization prays for the support of the community and for guidance concerning social issues and also seeks to create awareness of a larger vision of God's will in society. C.S.A. meets on a regular basis hosting programs that reflect theologically on a variety of social issues. Members of the group also provide leadership for events such as the annual Crop Walk, Red Cross blood drives, and they volunteer weekly to serve meals at Durham's shelter for the homeless.

**Community Life Committee.** The Community Life Committee is a committee of the Student Representative Assembly that plans community-wide events for students and faculty and their families. The activities include social gatherings during orientation, meals and parties at holiday times, and fellowship times throughout the school terms.

**Divinity Choir.** A student organization of long standing is the Divinity School Choir. Membership is open to all qualified students. The choir sings regularly for weekday worship and at special seasonal programs and services. New members are chosen by informal auditions that are arranged for all who are interested.

**Sacred Worth.** The purpose of this group is to serve the Divinity School community by increasing awareness of lesbians and gays in the Church. All members of the community are invited to participate, and the group seeks to enhance understanding about homosexuality in the Church through various opportunities for discussion and dialogue.

**Order of St. Luke.** Formed to bring about a recovery of the worship and sacramental practice which has sustained the Church since its formation in apostolic times, the Order of St. Luke is a religious order within the United Methodist Church that additionally is concerned to help recover the spiritual disciplines of John and Charles Wesley as a means of perceiving and fulfilling the Church's mission. Membership in the Order is open to all seminarians.

**Spiritual Formation Groups.** While students advance in the area of academics, they have a corresponding need to attend to their spiritual development. Within the community there are several student-initiated small groups that help meet such needs. Students, faculty, and staff are all invited to participate.

**Student Pastors Association.** Students actively serving their denominations in an ordained or lay capacity have the opportunity to meet, to share, to plan, and to act on their common needs and concerns.

**The Between Times.** This publication is the weekly student newspaper that reports on student activities, posts information on field education opportunities, and announces important events in the community. The paper also gives students a forum for presenting various ideas and for editorials.

**Theological Students Fellowship.** T.S.F. is a student group formed for students who seek to understand, study, and discuss evangelical perspectives on issues in theological education and the Church. Meetings are bi-weekly.

**Women's Center.** The Women's Center serves the entire Divinity School community through a focus on the special needs and contributions of women in ministry in and to the Church and society. The office, coordinated by two women, is a resource center for the whole community, in addition to a support and action center for women in particular.

The student body is also represented on various faculty committees. Students serve with faculty and administration on the Admissions, Field Education Policy, Financial Aid Policy, Worship, Fine Arts, Lectures, Educational Affairs, and other committees. In addition, the Judicial Board is composed of a representative group from the Divinity School community.

## Living Accommodations

**On-Campus Housing.** Limited on-campus housing is available for single and married (with or without children) graduate students at Central Campus Apartments and Townhouse Apartments. For more information contact Housing Administration, 218 Alexander Street, Apt. B., Durham, NC 27705, (919) 684-4304. Additionally, on-campus housing is available to graduate students who serve in residential advisor (R.A.) positions. This program includes free room and a stipend. Many Divinity students find this a helpful way to finance their theological education and to get involved in the larger university community. Students interested in serving as a residential advisor should contact the Residential Life Office, Box 90946, 200 Crowell Hall, Duke University, Durham, NC 27708-0946, (919) 684-6313. Residential advisor applications are normally due the last week in January, and advisors are selected in March for the following academic year. However, interested students admitted to the Divinity School after March should still contact the Residential Life Office in the event that openings are still available.

**Off-Campus Housing.** The majority of Divinity students live in off-campus apartment complexes because of their proximity to the school and their competitive rental rates. Off-campus rental properties are not inspected or approved by Duke University, nor does the university or its agents negotiate with owners for students. A listing of such complexes can be secured from the Admissions Office of the Divinity School or from the Department of Housing Administration of Duke University Duke Housing Administration, Box 90452, Durham, NC 27708, (919) 684-5813. The Department of Housing Administration also maintains lists of rooms and houses provided by Durham property owners and real estate agents who have agreed not to discriminate in the rental of property because of the race, sex, creed, or nationality of a prospective tenant. For assistance with Divinity School roommates, contact the admissions office of the Divinity School.

**Food Services.** Food service facilities located throughout the Duke campus include both point plan and cash operations. Details are available from the Food Services Business Office, Box 90847, Durham, NC 27708 (919) 660-3900. West Campus dining facilities include the Blue and White Room cafeteria, the Cambridge Inn, and the Oak Room, all located in West Campus Union Building. Fast food operations are also located in the Bryan Center. Duke University Food Services is a leading employer on campus,



and hires students in almost every food operation. A listing of open positions and areas is available from the Student Labor Services Office, 302 West Campus Union Building.

## Student Health

The aim of the university health service is to provide medical care and health advice necessary to help the student enjoy the university community. To serve this purpose, both the university health service clinic and the university infirmary are available for student health care needs.

The main components of the health service include the university health service clinic, located in the Pickens Building on Erwin Road, and the university infirmary in Duke Hospital South. Emergency transportation, if required, can be obtained from the Duke campus police. Residential staff personnel or Divinity School administrators should be consulted whenever possible for assistance in obtaining emergency treatment.

The facilities of the university health service clinic are available during both regular and summer sessions to all currently enrolled full-time and part-time degree students. The facilities of the university infirmary are available during the regular sessions, from the opening of the university in the fall until graduation day in the spring to all currently enrolled full-time and part-time degree students. A required fee for student health services (\$384 in the 1995-96 academic year) is assessed for all degree students on a semester basis.

The university has also made available a single student health insurance plan (\$600 in the 1995-96 academic year) and a family plan (for an additional \$1,290 in the 1995-96 academic year) for major medical care for all full- and part-time degree students for a twelve-month period (all prices are subject to change). Each full- or part-time degree student must purchase this student insurance or complete the waiver statement contained on the university invoice indicating that he/she is covered by other generally comparable insurance. The family insurance plan also covers basic health care for the family at Duke health care facilities at 80 percent of the usual, customary, and reasonable (UCR) allowance after the deductible has been satisfied. For more information on the insurance plans, please contact the plan administrator: Hill, Chesson, and Associates, P.O. Box 52207, Durham, NC 27717-2207, (919) 489-7426.

**Counseling and Psychological Services.** Counseling and Psychological Services (CAPS) is a component of student services that provides a coordinated, comprehensive range of counseling and developmental services to assist and promote the personal growth of Duke students. The professional staff is composed of psychologists, clinical social workers, and psychiatrists experienced in working with students of all ages. They are also available to the entire university community for consultation, educational activities in student development, and mental health issues affecting not only individual students but the campus community as a whole.

CAPS maintains a policy of *strict confidentiality* concerning information about each student's contact with the CAPS staff. There are no charges for initial evaluation, brief counseling/psychotherapy, or self-development seminars. Appointments may be made by calling 660-1000 or coming by the office in 214 Page Building, West Campus, between 8:00 A.M. and 5:00 P.M., Monday through Friday. If a student's concern needs immediate attention, that should be made known to the secretary, and every effort will be made to arrange for the student to talk with a staff member at the earliest possible time.

**Sexual Assault Support Services.** Located in the Duke Women's Center, the Office of Sexual Assault Support Services offers advocacy, support, information resources in the university, referrals, and twenty-four hour crisis intervention services to victims of sexual assault and past sexual violence. To page the S.A.S.S. coordinator twenty-four hours a day dial 970-2315, and at the prompt, enter your phone number and hang up. The coordinator will dial back. S.A.S.S. offers support groups for survivors and their

friends or partners. Call 684-3897 for information. The S.A.S.S. coordinator offers workshops and initiates ongoing educational programs to alert students to problems of interpersonal violence.

## **Motor Vehicles**

Each student possessing or maintaining a motor vehicle at Duke University must register it at the beginning of the academic year. If a motor vehicle is acquired and maintained at Duke University after academic registration, it must be registered within five calendar days after operation on the campus begins. Resident students are required to pay an annual fee of \$132 for each motor vehicle or \$40 for each two-wheeled motor vehicle. Students first registering after January 1 are required to pay \$66 for a motor vehicle or \$20 for a two-wheeled motor vehicle.

At the time of registration of a motor vehicle, the following documents must be presented: the state vehicle registration certificate, a valid driver's license, and satisfactory evidence of automobile liability insurance coverage with limits of at least \$10,000 per person, \$20,000 per accident for personal injuries, and \$5,000 for property damage, as required by the North Carolina motor vehicle law.

If a motor vehicle or a two-wheeled motor vehicle is removed from the campus permanently and the decal is returned to the traffic office prior to January 20 there will be a refund of one-half of the fee paid for either a motor vehicle or a two-wheeled motor vehicle.

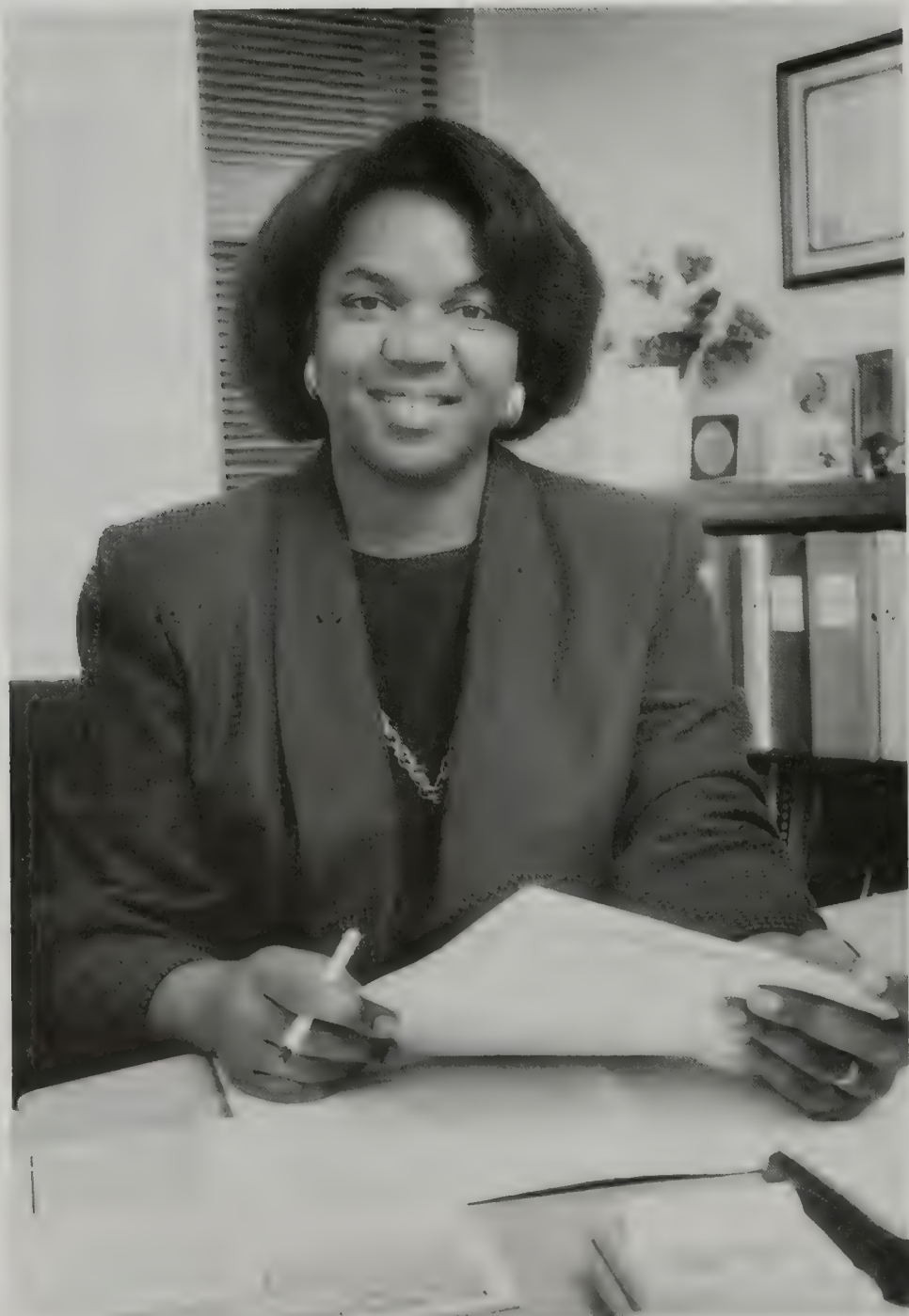
## **Cultural Resources**

Divinity School students enjoy access to the many resources of the university community, particularly in the area of the performing arts. Two active campus film societies sponsor screenings of major motion pictures on Saturday and Sunday evenings. Other films of a classical nature are offered on Tuesday through Thursday nights, with free films for children scheduled every other Saturday morning. Opportunities in music, dance, and drama are provided by the following: the Duke Artists Series, Broadway at Duke, the Chamber Arts Society, Hoof 'n Horn, the Duke University Collegium Musicum, Duke Players, Duke Dance, the Duke University Symphony Orchestra and the Wind Symphony, the Duke University Jazz Ensemble, the Ciompi Quartet, Dance Black, and the Modern Black Mass Choir, among others.

## **Athletic Programs**

In addition to unrestricted access to all university athletic and recreational facilities, divinity students enjoy other benefits from Duke's commitment to college athletics. The university is a member of the Atlantic Coast Conference of the National College Athletic Association, and offers intercollegiate competition in a variety of sports. Special admission rates to football and basketball games are available to graduate and professional students. The university supports a strong intramural program in which the Divinity School participates enthusiastically. In recent seasons the school has fielded teams in football, men's, women's, and co-rec basketball, volleyball, soccer, and softball.

*Financial Information*



*Financial Aid Assistant Sheila Williams.*



## Fees and Expenses

**Master of Divinity, Master of Theological Studies, and Master in Church Ministries Candidates.** The table below lists basic minimum expenditures. In addition to the fees cited here, there is an admission fee of \$50 which is applied to the first term bill. See relevant section on admissions for details.

|  | <i>Per Semester</i> | <i>Per Year</i> |
|--|---------------------|-----------------|
| Tuition-M.Div., M.T.S., and M.C.M.     | \$4,500             | \$9,000         |
| Student Health Fee                     | 195                 | 390             |
| Student Representation Association Fee | 20                  | 40              |

Tuition will be charged at the rate of \$1,125 per course. The figures shown are for a program carrying eight courses per year. Students will be charged for additional course enrollments.

**Master of Theology Candidates.** A student who is a candidate for the Th.M. degree will be liable for tuition on the basis of eight courses at the rate of \$1,125 per course. All other costs and regulations for the Th.M. degree are the same as those for the M.Div. degree. Th.M. students are not ordinarily eligible for institutional financial aid, although they may qualify for federal loans.

**Special Student.** A special student is one who is enrolled for academic credit, but who is not a candidate for a degree at that time. The tuition will be charged on a course basis. Other costs and regulations are the same as those for M.Div. candidates. No financial aid is available.

**Audit Fee.** Anyone seeking to audit a course in the Divinity School must, with the consent of the instructor concerned, secure permission from the associate dean's office. In accordance with the general university practice, a fee of \$100 per course will be charged to all auditors who are not enrolled as full-time students.

**Late Registration Fee.** Continuing students who fail to register during the registration period must pay a fee of \$50 to the bursar.

**Course Continuation Fee.** In instances where a student has registered for but not completed all the courses or requirements for their program, a \$200 fee is required. Register for CCF 101,102.

**Estimated Living Expenses.** The total cost, including tuition for eight courses, for a student to attend Duke Divinity School varies according to individual tastes and requirements; however, experience indicates that a student may expect to spend an average of \$20,870.

**Housing Fees.** Estimated minimal off-campus housing cost for a single student (one bedroom townhouse) will be approximately \$3,525 during 1996-97. Presently the university does not provide housing for married students. Housing fees are subject to change prior to the new academic year. A \$100 residential deposit is required on all reservations.

Rates for Central Campus Apartments will be quoted to applying students upon request to the manager of apartments and property. Refunds on housing fees will be made in accordance with the established schedules of the university.

**Athletic Fee.** Divinity School students may secure admission to all regularly scheduled university athletic contests (except men's varsity basketball games) held on the university grounds during the entire academic year simply by presenting the student identification card. Season tickets to the men's varsity basketball games are secured through a lottery system and cost \$100 per season.

**Motor Vehicle Registration Fee.** There is a \$60 registration fee for all automobiles (\$35 for two-wheeled motor vehicles) used on campus. Students who register their automobile will not be charged for registration of a motorcycle. For specifics see the chapter "Community Life."

**Payment and Penalty.** Invoices for tuition, fees, and other charges will be sent by the bursar's office and are payable by the invoice due date. As a part of the agreement of admission to Duke University, a student is required to pay all invoices as presented. If full payment is not received, a late payment charge as described below will be assessed on the next invoice and certain restrictions as stated below will be applied. A monthly tuition payment plan is now available through Tuition Management Systems. For more information on this plan, please call 1-800-722-4867 or write to Tuition Management Systems, P.O. Box 3013, Cedar Rapids, IA 52406-9114.

If payment in the amount of the total amount due on the student invoice is not received by the invoice due date, a penalty charge will be accrued from the billing date of the invoice. The penalty charge will be at a rate of 1 1/3 percent per month (16 percent per annum) applied to the past due balance on the student invoice. The past due balance is defined as the previous balance less any payments and credits received during the current month and also any student loan memo credits, related to the previous balance, which appear on the invoice.

An individual will be in default of this agreement if the total amount due on the student invoice is not paid in full by the invoice due date. An individual who is in default will not be allowed to register for classes, receive a transcript of academic records, have academic credits certified, be granted a leave of absence, or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from school.

Refunds of tuition and fees are governed by the following policy:

1. In the event of death a full tuition and fees refund will be granted.
2. In all other cases of withdrawal from school, tuition will be refunded according to the following schedule: withdrawal before the opening of classes—a full refund; withdrawal during the first or second week—80 percent; withdrawal during the third through fifth week—60 percent; withdrawal during the sixth week—20 percent; withdrawal after the sixth week—no refund. *No refund will be granted for reduction in course load after the drop-add period.*

Tuition or other charges paid from grants or loans will be restored to those funds on the same pro rata basis and will be refunded to the student or carried forward.

These regulations apply to all Divinity School students—degree candidates, special students, and auditors.

**Debts.** No records are released, and no students are considered by the faculty as candidates for graduation, until they have settled with the bursar for all indebtedness. Bills may be sent to parents or guardians provided the bursar has been requested in writing to do so. Failure to pay all university charges on or before the times specified by the university for the semester will bar the student from class attendance until the account is settled in full.

## Student Financial Aid

A student should select a school on the basis of educational opportunity. At the same time financial consideration will be a legitimate and often pressing concern. Each student should formulate at least a tentative plan for financing the entire seminary education. Although the exact method of financing the full theological degree may not be assured at the beginning, a student should have a clear understanding of the expenses and available sources of income for the first year and the assurance that there exist ways of financing subsequent years.

As Duke Divinity School seeks to handle its financial resources with a view toward Christian charity and stewardship, the school expects responsibility and integrity of students befitting their Christian commitment. While the Financial Aid Office is willing to aid students with financial counsel, the student and the student's family will bear a significant share of the educational expenses. In addition to personal and family resources, earnings, and loans, a student may seek financial assistance from his or her local church, civic groups, and foundations. The Divinity School financial aid may include scholarships, grants, field education grants, employment, or loans. Students should plan a financial program that incurs as little indebtedness as possible. Most Divinity School students receive some form of financial assistance, and students need to be mindful that such aid is a privilege to be enjoyed thanks to the many benefactors who have graciously given funds to the school.

The total amount of aid available through the Divinity School is limited. Further, the conditions set forth by the individual or institutional donors determine the circumstances under which the grants can be made. *Almost without exception the donors require ecclesiastical endorsement and/or declaration of ministerial vocational aim.*

The principles regarding the disbursement of financial aid are as follows:

1. Financial aid is recommended on the basis of demonstrated need and availability of funds. All students must file a Divinity School Application for Financial Aid and the Free Application for Federal Student Aid (FAFSA), which substantiate need and provide full information on potential resources. In order to receive assistance in any form from the Divinity School, a student must be enrolled for at least three courses per semester and maintain an overall academic average of 2.0 or higher. Falsification of a financial aid application is a serious offense subject to the provisions of the Divinity School's Judicial Procedures.
2. Grants will be made within the limits of the conditions set forth governing each source.
3. The conditions at the beginning of the academic year determining financial needs shall be the governing criteria for the year. Financial aid programs are set up on a yearly basis, except for those students who may enter the second semester and/or those few whose status may change.
4. Financial aid grants are made on an academic-year basis. The assistance may consist of scholarships, tuition grants, field education grants, employment, and loans. A new application must be filed each year.
5. Tuition grants are ballooned for the first year of study to assist students as much as possible through their transitional first year at Duke. *Consequently, grants for the second and third years of study will be less than those awarded for the critical first year.*
6. Financial aid application forms are available through the Divinity School Financial Aid Office. Financial aid application deadlines are April 1 for entering M.T.S. students and May 1 for M.Div., M.C.M., and returning M.T.S. students. Notification will be given after committee approval. Student pastors serving United Methodist churches can be notified after the pastoral charge and



Annual Conference determine salary schedules. Financial aid applications for students anticipating fall matriculation are reviewed beginning the prior January.

7. Ordinarily, Divinity School financial aid is not available for the first semester for students who enter in January; however, entering January students can apply for federal student loans. These students can apply in the spring for the following academic year's Duke financial aid.
8. Ordinarily, financial aid is not available beyond six semesters (eight for pastors on reduced load).
9. Full-time students not participating in the field education program may work up to twenty hours per week in outside employment. Persons participating in the field education program, either summer or winter, may not engage in other forms of employment.
10. Students who have questions about the Divinity School's response to their financial aid request should first contact the financial aid office. Where desired, students may file an appeals form for full review by the financial aid appeals committee.
11. Financial aid resources for M.T.S. students are limited. Candidates are encouraged to apply early.
12. Special students and Th.M. students (with the exceptions of one international scholar and one Parish Ministry Fund scholar annually) are not eligible for any form of financial assistance from the Divinity School. Th.M. students are eligible to apply for denominational and federal loans.

## Financial Resources

**Personal.** In order that both the Divinity School and churches may be able to extend the use of their limited funds to as many students as possible, a student who desires a theological education should be willing to defray as far as possible the cost of such an education. Resources may include savings, earnings, gifts, support or loans, and if married, earnings of a spouse. In calculating anticipated income, the student first considers personal resources.

**Church.** Many local churches, conferences, or other governing bodies provide gifts and grants for theological education, such as ministerial education funds that provide grants and/or service loans to theological students. The student makes application to the home church, annual conference, presbytery, or other governing body. The financial aid office cooperates with these church agencies in making recommendations and in handling the funds. *United Methodist students and others must be under the care of the appropriate church body to be eligible for church support.* The school cannot compensate for a student's indisposition to receive church funds when such are available on application through the Annual Conference Ministerial Education Fund or other agencies.

The Divinity School, as a member school of the Association of United Methodist Theological Schools, takes cognizance of and subscribes to recommended policy and practice regarding the administration of United Methodist Church funds for student financial aid as adopted by the association, 1 June 1970, and as bearing upon tuition grants, as follows:

Resources for tuition grants, scholarships or the like are primarily available to students with declared vocational aims leading to ordination or recognized lay ministries and supported by commendation or endorsement of appropriate church representatives. At the same time, we believe that consideration for a tuition grant may be accorded to students who adequately indicate conscientious concern to explore, through seminary studies, a recognized church-related vocation. Finally, it is our judgment that, where the above-mentioned conditions are deemed to be absent respecting a candidate for admission, the decision to admit such a candidate should be without the assurance of any tuition subsidy deriving from church funds (AUMTS *Minutes*, 1 June 1970).

**Divinity School Scholarships.** A limited number of scholarships are available to encourage qualified students to pursue their preparation for the Christian ministry. Scholarships are awarded only to students entering in fall semester and are not deferrable.

*Duke Scholarships.* Duke Scholarships, ranging up to \$9,000 per year, are awarded to both entering and returning students who demonstrate outstanding academic achievement and exceptional promise for either ordained or diaconal/lay ministry. Up to eight scholarships are awarded annually to entering Master of Divinity and Master in Church Ministries (formerly M.R.E.) candidates. Up to three additional scholarships are offered to rising middler students in these programs (who have completed at least seven courses). The scholarship will be renewed each year so long as the recipient (1) maintains at least a cumulative 3.6 overall grade point average and (2) is growing in his or her understanding, skills, and commitment to the ministry of the church. The specific amount of the scholarship will vary according to the recipients academic course load and demonstrated financial need and will not exceed \$9,000 for the academic year. Recipients without demonstrated financial need will receive a \$1,000 scholarship.

*Distinguished Service Scholarships.* Up to five Distinguished Service Scholarships, ranging up to \$6,000 per year, are awarded to entering Master of Divinity and Master in Church Ministries (formerly M.R.E.) students who combine outstanding leadership and service in the church with strong academic achievement. These scholarships are renewable in the second and third years of study assuming the recipients (1) exhibit continued ministerial promise and growth as reflected in participation in field education and the life of the Divinity School and Durham communities, and (2) maintain strong academic achievement with a cumulative grade point average of 3.4 or higher. The specific amount of the scholarship will vary according to the recipients academic course load and demonstrated financial need and will not exceed \$6,000 for the academic year. Recipients without demonstrated financial need will receive a \$1,000 scholarship.

*Deans Scholarships.* Up to twelve Deans Scholarships, ranging up to \$6,000 per year, are awarded to entering Master of Divinity and Master in Church Ministries (formerly M.R.E.) students. Factors taken into account include ethnic origin, missional responsibilities for the Church at home and abroad, and denominational needs. These scholarships are renewable in the second and third years of study assuming the recipients (1) exhibit continued growth in the understanding of and commitment to Christian ministry and (2) maintain strong academic achievement with a cumulative grade point average of 3.0 or higher. The specific amount of the scholarship will vary according to the recipient's academic course load and demonstrated financial need and will not exceed \$6,000 for the academic year. Recipients without demonstrated financial need will receive a \$1,000 scholarship.

*Martin Luther King, Jr. Memorial Endowed Fund Scholarships.* Up to five scholarships annually are given to entering students who belong to ethnic minorities. These scholarships, based on demonstrated need, reward outstanding promise for ministry and strong academic performance. The scholarship award is a minimum of \$1,000 and is not renewable for the second and third years of study.

*International Student Scholarships.* In cooperation with the Crusade Scholarship Committee of the United Methodist Church and other authorized church agencies, students are selected and admitted to courses of study. Scholarships for such students are provided from the Lewis Clarence Kerner Scholarship Fund and from individual churches and private philanthropy. The Divinity School offers one scholarship per year to an international student in the Master of Theology degree program. The scholarship offers up to one year's full tuition.

*Parish Ministry Fund Scholarship.* Two scholarships are given to students pursuing a Master of Theology degree in Wesleyan Studies. Students are selected on the basis of uncommon promise for ministry and must be a member of either the Western North Carolina or the North Carolina Annual Conferences of the United Methodist Church.

**Other Scholarship Awards.** Named scholarships funded by permanent endowments as listed on the pages following are awarded annually. In addition, the Divinity School receives funds designated for scholarships each year from several other sources including the Dickson Foundation of Mount Holly, North Carolina; the Will Ervin Fund of Richland, North Carolina; the H.E.S., Inc. of Los Angeles, California; the Magee Christian Education Foundation of Bloomsburg, Pennsylvania; and numerous individuals and service organizations.

**Tuition Grants.** These are available in amounts commensurate with demonstrated need as adjudged by the Committee on Financial Aid. Because of the purpose and attendant educational objectives of the school, resources for tuition grants are primarily available to students with declared aims leading to ordination or recognized lay ministries.

**Field Education Grants.** Varying amounts ranging from \$3,400 (winter) to a maximum of \$7,500 (summer) are made available through the Divinity School to students who are approved to participate in the field education program. The Offices of Field Education and Financial Aid work together in determining placement and grant amount. This program includes the summer interns, winter interns, and student pastors. See full description under the section on field education.

**Duke Endowment Student Pastor Grants.** United Methodist students serving under episcopal appointment as student pastors in the state of North Carolina may qualify for tuition assistance of no more than \$3,400 through the Duke Endowment. The Financial Aid Committee will determine student eligibility for such assistance after appointments are read at the meetings of the two North Carolina United Methodist Annual Conferences.

**Loans.** Loan funds held in trust by the university, as well as United Methodist student loans and funds supplied by the federal government are available to qualified students. The application must be submitted by 1 July.

Unless otherwise indicated, all correspondence concerning financial aid should be directed to: Financial Aid Office, The Divinity School, Duke University, Box 90969, Durham, North Carolina 27708-0969.

**Employment.** Students or spouses desiring employment with the university should apply to the Duke University Employment Office. Students or spouses make their own arrangements for employment either in the city of Durham or on campus.

## Endowed Funds

Certain special funds have been established as endowments, the income from which is used to provide financial aid through scholarships and field education grants for students, support for professorships, library resources, and enhancement of the Divinity School program. The funds listed below serve as essential resources for the preparation of persons for leadership in Christian ministry. **Individuals do not apply for any of these funds.** All awards are made through appropriate committee action according to university guidelines.

**The Aldersgate Endowed Scholarship Fund** was established in 1989 by Lucy and J. Wesley Jones of Fayetteville, North Carolina, through a major matching gift challenge that yielded subsequent generous contributions to the fund by graduates and friends of the Divinity School. The fund is currently the largest single endowed resource for student financial aid. The Aldersgate name celebrates the times of spiritual insight essential for faithful Christian ministry.

**The Alexander Scholarship Endowment Fund** was established in 1992 by Milton Donald Alexander, Jr., of Blythewood, South Carolina, to honor his family and to



encourage excellence in the preparation for Christian ministry. The fund gives priority to students from South Carolina.

**The Alumni Scholarship Fund** was established in 1976 by the graduates of the Divinity School to provide financial support for ministerial candidates.

**The Martha Anne Hills Andrews and John Spell Andrews Scholarship Fund** was established in 1985 by Don W. Andrews in memory of his wife, Martha Anne, Divinity School Class of 1982, and their son, John. The fund income provides student scholarships, with preference given to women and men from South Carolina.

**The R. Ernest Atkinson Legacy** was established in 1952 under the will of the Reverend R. Ernest Atkinson, Trinity College Class of 1917, Richmond, Virginia, for ministerial student assistance.

**The Avera Bible Fund** was established in 1895 by a gift of Mrs. L. B. McCullers in memory of her husband, Willis H. Avera. The income is for the purchase of books for the Divinity School Library and for the support of the Avera Bible Lectures.

**The Louis W. and Evelyn Bailey Memorial Fund** was established in 1958 by the Reverend Dr. A. Purnell Bailey, Class of 1948, in memory of his parents. The income is to be used for books for the Divinity School Library.

**The George L. Balentine Scholarship Endowment Fund** was established in 1991 by Geraldine Wells of Raleigh, North Carolina, to honor her pastor and to provide resources especially for students from the Baptist traditions who are seeking to become effective leaders and faithful pastors.

**The Chancie and Thelma Barclift Scholarship Endowment Fund** was established in 1986 by Dr. and Mrs. T. Harold Crowder, Jr., of South Boston, Virginia, in memory of Mrs. Crowder's parents who were church leaders in North Carolina for over fifty years. The income from the fund provides assistance for persons from North Carolina who intend parish ministry in the United Methodist Church.

**The Elizabeth Snyder Bisanar Scholarship Fund** was established in 1995 by G. Norman Bisanar of Concord, North Carolina, in memory of his wife. It provides financial aid resources for students, especially United Methodists, who are preparing for full-time Christian service.

**The Hargrove, Sr., and Kelly Bess Moneyhun Bowles Fund** was established in 1983 by John Bowles, Hargrove Bowles, Jr., R. Kelly Bowles, and James Bowles in memory of their parents. Income from the fund is for scholarship assistance in the Divinity School.

**The H. Hawkins Bradley Scholarship Endowment Fund** was established in 1993 by Mr. Bradley of Raleigh, North Carolina, to provide support for students from North Carolina and Virginia who are preparing for parish ministry in the United Methodist Church.

**The Fred W. Bradshaw Fund** was established in 1975 through a bequest from Fred W. Bradshaw of Charlotte, North Carolina, to be utilized for the enrichment of the educational program of the Divinity School, especially to support distinguished visiting scholars and outstanding students.

**The Campbell-Dowse Endowment Fund** was established in 1992 by a gift from the Scarritt Foundation of Nashville, Tennessee, to underwrite the Campbell-Dowse Program in Spirituality. The fund bears the names of Melba Moorman Campbell and Bonita Moorman Dowse, United Methodist laywomen whose keen interest in spirituality and leadership for the church has been matched by their generous contributions for an educational resource of remarkable quality.

**The Walter G. Canipe Scholarship Endowment Fund** was established in 1990 by Walter Canipe of Charlotte, North Carolina, to honor his family and to provide substantial resources for men and women preparing for parish ministry.

**The Emma McAfee Cannon Scholarship** was established in 1969 by Bishop William R. Cannon in memory of his mother, Emma McAfee Cannon, and is designated to assist students from the North Carolina Annual Conference of the United Methodist Church who are studying for the pastoral ministry and planning to serve in the North Carolina Conference.

**The Clark Fund for Emergency Assistance** was established in 1986 by Mrs. Kenneth W. Clark as a discretionary aid resource to help meet the needs of students who experience unforeseen crises due to serious illness, injury, or family emergencies.

**The Kenneth Willis Clark Lectureship Fund** was established in 1984 by Mrs. Adelaide Dickinson Clark in memory of her husband, Kenneth W. Clark, professor of New Testament in the Divinity School, 1931-67. The fund provides for distinguished lectureships in New Testament studies and textual criticism.

**The Class of 1944 Endowment Fund** was established in 1994 by contributions from the members of the Divinity School Class of 1944 to commemorate the fiftieth anniversary of their graduation and to provide each year in perpetuity significant support from the class for the unrestricted Annual Fund of the Divinity School.

**The James T. Cleland Endowment Fund** was established by friends and students of James T. Cleland to create a chair of preaching in his honor. He was dean of the Duke University Chapel from 1955 to 1973 and professor of preaching in the Divinity School.

**The Calvin W. and Jo Ann Carter Clem Endowment Fund** was established in 1989 by Divinity School Class of 1985 graduates Carter Dale and Kelly Ann Haugh Clem, of Jacksonville, Alabama, in memory of his parents. The fund income provides resources to enrich the educational experiences of students, especially with regard to travel and study seminars which encounter the Third World.

**The E. M. Cole Fund** was established in 1920 by Eugene M. Cole, a United Methodist layman of Charlotte, North Carolina, to support the education of ministers.

**The Lela H. Coltrane Scholarship** was established in 1980 by Mrs. David S. Coltrane of Raleigh, North Carolina, and friends of Mrs. Coltrane, to encourage excellence in ministry.

**The Robert Earl Cushman Endowment Fund** was established in 1980 to create a professorship in honor of Robert Earl Cushman, research professor of systematic theology and dean of the Divinity School, 1958-71.

**The Isobel Craven Drill Scholarship Endowment Fund** was established in 1993 by Mrs. Drill, Trinity College Class of 1937 and a trustee emerita, of St. Augustine, Florida. The fund income is for need-based financial aid. Mrs. Drill is the great-granddaughter of Braxton Craven, the first president of Trinity College.

**The Henry C. Duncan Fund** was established in 1982 by the Men of the Village Chapel, Pinehurst, North Carolina, to honor their pastor, Chaplain Henry C. Duncan, a member of the Divinity School Class of 1949. Income from the fund is used for scholarships.

**The Irving Ray Dunlap Scholarship Endowment Fund** was established in 1993 by Paul R. Dunlap of Kitty Hawk, North Carolina, in memory of his father, a missionary to China and pastor of Evangelical United Brethren churches in Pennsylvania. The fund income is to provide support for older students, especially those preparing for a second career in parish ministry.

**The Lora R. Dysart Fund** was established in 1989 by a bequest in the will of Mrs. Dysart, late of Morganton, North Carolina, to provide financial aid for needy students.

**The N. Edward Edgerton Fund** was established in 1939 by N. Edward Edgerton, Trinity College Class of 1921, of Raleigh, North Carolina, for the support of ministerial education.

**The Thomas Carl Ethridge Endowment Fund** was established in 1990 by William C. Ethridge of Raleigh, North Carolina, in memory of his father. Income from this fund assists the Divinity School Library.

**The Donn Michael Farris Endowment Fund** was established in 1992 by Mrs. Lyndal D. Leonard of Durham, North Carolina, to honor Professor Farris for his forty-two years of distinguished service as the Divinity School librarian. The fund will provide annual unrestricted income for the library.

**The Randolph R. and Shirley D. Few Scholarship Endowment Fund** was established in 1987 by Mr. and Mrs. Few of Durham, North Carolina, to provide assistance for ministerial students from the North Carolina Conference of the United Methodist Church.

**The George D. Finch Scholarship Fund** was established in 1972 by George David Finch, Trinity College Class of 1924, of Thomasville, North Carolina, for the support of ministerial education.

**The Edgar B. Fisher Memorial Scholarship Endowment Fund** was established in 1987 by the family of Dr. Fisher to commemorate his life of distinguished service in ministry and to provide assistance for men and women preparing to be United Methodist pastors in North Carolina.

**The Fitzgerald Family Endowment Fund** was established in 1995 by F. Owen Fitzgerald, Jr., Divinity School Class of 1954, of Raleigh, North Carolina, with appreciation for the educational ties of his family with Duke University. The fund income is for the unrestricted support of the Divinity School.

**The Mary Owens Bell Fitzgerald Scholarship Endowment Fund** was established in 1992 by F. Owen Fitzgerald, Jr., Divinity School Class of 1954, of Raleigh, North Carolina, to honor his wife and to provide support for study abroad by students who are preparing for United Methodist parish ministry.

**The Shelley Abbey Fogleman Scholarship Endowment Fund** was established in 1989 by L. Jan Fogleman of Durham, North Carolina. It is in memory of his wife, Shelley, Divinity School Class of 1983, and their children, Sarah Elizabeth, Hannah Rebekah, and Stephen Michael. The fund income provides scholarships for women, with preference given to those who are mothers of young children.

**The L. Brunson George, Sr. Endowment Fund** was established in 1993 by Mrs. Evelyn Dacus George of Hermitage, Tennessee, in memory of her husband who was a member of the Divinity School Class of 1933 and a United Methodist pastor. The fund income is for unrestricted support.

**The Clara S. Godwin Endowment Fund** was established in 1993 by the Divinity School and friends at her retirement as director of finance and administration to honor Mrs. Godwin's twenty-four years of service. Income from the fund is for unrestricted support.

**The Richard A. Goodling Memorial Endowment Fund** was established in 1989 by John P. Jaquette, Jr., Divinity School Classes of 1968 and 1970, of Scotia, New York, to honor Dr. Goodling who, from 1959 until his death in 1986, was professor of pastoral



psychology in the Divinity School. The fund income is designated for lectures and seminars in the field of pastoral care.

**The W. Kenneth and Martha O. Goodson Fund** was established in 1981 to honor Bishop Goodson, Divinity School Class of 1937 and retired Bishop of the United Methodist Church, and Mrs. Goodson. The fund was doubled in 1985 by a major gift for scholarships and parish ministry support from Bishop and Mrs. Goodson.

**The Ned and Carmen Hagggar Scholarship Fund** was established in 1985 by Carmen Hagggar of Pinehurst, North Carolina, through her son, Alexander J. Hagggar, to support theological education at Duke.

**The P. Huber Hanes Scholarship** was established by the late P. Huber Hanes of Winston-Salem, North Carolina, Trinity College Class of 1900, as a scholarship fund for Duke University, a portion of which is used to provide financial assistance for Divinity School students.

**The Richard R. Hanner, Jr., Scholarship** was established in 1973 by friends of the late Richard R. Hanner, Jr., Trinity College Class of 1953, to support advanced work in Christian education.

**The Russell S. and Julia G. Harrison Scholarship Fund** was established in 1980 by Russell S. Harrison, Divinity School Class of 1934, and his wife, Julia G. Harrison. The fund supports persons from the North Carolina Conference of the United Methodist Church preparing for ordained ministry as local church pastors.

**The Harvey Fund** was established in 1982 by C. Felix Harvey and Margaret Blount Harvey, Trinity College Class of 1943, of Kinston, North Carolina, to provide scholarship assistance for students preparing for parish ministry.

**The Stuart C. Henry Collection Endowment Fund** was established by the Class of 1975 to honor Professor Henry. Income from the fund is used to enhance the collection of books on American Christianity. Substantial additional contributions to this fund have been made by Miss Marion D. Mullins of Fort Worth, Texas.

**The Stuart C. Henry Scholarship Fund** was established in 1986 by Mr. and Mrs. A. Morris Williams, Jr., of Gladwyne, Pennsylvania, to honor the distinguished teaching career of Professor Henry and to provide assistance for students, with preference given to those affiliated with the Presbyterian Church.

**The Chesley Carlisle Herbert, Jr. Endowment Fund** was established in 1993 by Mrs. Elizabeth Rose Herbert of Charlotte, North Carolina, Mr. and Mrs. George F. Pickett of Atlanta, Georgia, and Dr. Chesley C. Herbert III of San Francisco, California, in memory of Dr. Herbert. A member of the Trinity College Class of 1926 and the Divinity School Class of 1929, he served as a minister in the Western North Carolina Conference of the United Methodist Church. The income from the fund is for unrestricted support.

**The Franklin Simpson Hickman Memorial Fund** was established in 1966 by Mrs. Vera Castell Hickman in memory of her husband, Franklin S. Hickman, who served as professor of the psychology of religion, the dean of the Chapel of Duke University, and the first preacher to the university. The fund income supports a regular visiting lecturer in preaching and provides financial aid to students who wish to specialize in the psychology of religion.

**The Geraldine Dysart Ingram Endowment Fund** was established in 1990 by Margaret A. Dysart of Pinetops, North Carolina, to honor her daughter, Geraldine D. Ingram, Divinity School Class of 1982. The fund income is used for scholarships or grants-in-aid, with preference given to women who are preparing for ministry as a second career.

**The George M. Ivey Scholarship Fund** was established in 1948 by a gift of George M. Ivey, Trinity College Class of 1920, of Charlotte, North Carolina, for the support of ministerial education.

**The George Washington Ivey Professorship** with initial funding by the Western North Carolina Conference of the United Methodist Church and later funding by George M. Ivey, George M. Ivey, Jr., Leon Ivey, and the Ivey Trust is the oldest named professorship in the Divinity School.

**The Robert L. Jerome Memorial Endowment Fund** was established in 1989 by Jean Porter Jerome of Smithfield, North Carolina, to honor the life and ministerial service of her late husband, a graduate of Trinity College Class of 1926 and the Divinity School Class of 1929. The fund provides financial assistance primarily to international students.

**The Johnson-Whitaker Scholarship Fund** was established in 1995 by Lynda J. and Scott L. Whitaker of Gainesville, Florida, in honor of her parents, Jesse and Marjorie Johnson, and their son, Nathan Clarke Whitaker, Trinity College Class of 1991. The fund is to glorify God by providing financial support for students preparing for ordained Christian ministry.

**The Jameson Jones Memorial Fund** was established in 1982 by a bequest and memorial gifts following the untimely death of Jameson Jones, dean of the Divinity School, 1981-82. The fund provides for the enrichment of programs and study opportunities.

**The Charles E. Jordan Scholarship Fund** was established in 1969 by the family of Charles E. Jordan, former vice-president of Duke University, to support the education of ministers.

**The Jordan-Sprinkle Scholarship Endowment Fund** was established in 1990 by Margaret Jordan Sprinkle of Winston-Salem, North Carolina, honoring her late husband, Henry C. Sprinkle, and their families. The fund is to encourage training for distinguished pastoral leadership.

**The William Arthur Kale, Jr., Memorial Fund** was established in 1964 by Professor and Mrs. William Arthur Kale, Sr., for the purchase of books and other materials in the area of fine arts and religious musicology for the perpetual enrichment of the holdings of the Divinity School Library. William Arthur Kale, Jr., was a member of the Duke University Chapel Choir.

**The Amos Ragan Kearns Professorship** was established in 1970 by a gift from the late Amos Ragan Kearns of High Point, North Carolina, for a chair in religion.

**The Lewis Clarence Kerner Scholarship** was established in 1959 by Beatrice Kerner Reavis of Henderson, North Carolina, in memory of her brother and designated for the assistance of native or foreign-born students preparing for service in world Christian mission.

**The Carl H. and Mary E. King Memorial Fund** was established in 1976 by family and friends of Carl and Mary King, distinguished church leaders in Western North Carolina Methodism, to support students preparing for educational ministry in the parish.

**The Martin Luther King, Jr., Memorial Scholarship Endowment Fund** was established in 1990 by a grant from the Pine Tree Foundation of Gladwyne, Pennsylvania, at the request of Ruth and A. Morris Williams, Jr. The endowment commemorates the life and work of Dr. King and is a resource for African-American students who will be leaders of the Church.

**The Sally B. Kirby Scholarship Endowment Fund** was established in 1989 by Wallace H. Kirby, Divinity School Class of 1954, of Durham, North Carolina, as a memorial to his wife. Priority use of the fund income is for scholarships in the Master of Religious Education degree program.

**The Milton Davies Kirkland Scholarship Endowment Fund** was established in 1991 by Mr. Kirkland, Divinity School Class of 1990, of Harrisonburg, Virginia, in appreciation for the United Methodist Church and Duke Divinity School. The fund will give priority to United Methodists from the Virginia Annual Conference.

**The James Allen and Sally Templeman Knight Scholarship Endowment Fund** was established in 1989 by James A. Knight, Divinity School Class of 1944, of New Orleans, Louisiana, to provide student financial aid, especially for United Methodist students from South Carolina who intend parish ministry.

**The John Haden Lane Memorial Scholarship** was established in 1968 by the family of John H. Lane to provide support for education in Christian ministry, including chaplaincy and other specialized work.

**The Louie Mae Hughes Langford Scholarship Endowment Fund** was established in 1988 by Dr. and Mrs. Thomas A. Langford in memory of his mother.

**The Thomas A. and Ann Marie Langford Fund** was established in 1981 in honor of Dr. Thomas A. Langford, dean of the Divinity School, 1971-81, and Mrs. Langford.

**The Thomas A. Langford Professorship in Divinity Endowment Fund** was established in 1994 by friends and colleagues to honor the service of Dr. Langford: alumnus, distinguished professor, dean of the Divinity School, provost of the university, and trustee of the Duke Endowment.

**The Laurinburg Christian Education Fund** was established in 1948 by members of the First United Methodist Church, Laurinburg, North Carolina, for ministerial education.

**The Harriet V. Leonard Scholarship Endowment Fund** was established in 1992 by Mrs. Lyndal D. Leonard of Durham, North Carolina, to honor her daughter, retiring as the reference librarian for the Divinity School, and to provide scholarships for women with a priority for those who are beginning a second career.

**The John Joseph Lewis Fund** was established in 1982 by Colonel Marion S. Lewis, Trinity College Class of 1916, of Charleston, South Carolina, to honor his father, a circuit-riding Methodist preacher. The fund income provides scholarship support.

**The D. M. Litaker Scholarship** was originally established by Charles H. Litaker in 1946 in honor of his father, Dr. D. M. Litaker, Trinity College Class of 1890, and was specified for the Divinity School in 1977 by the Litaker family. The income is for support of persons preparing for ministry in the Western North Carolina Annual Conference of the United Methodist Church.

**The Calvin M. Little Scholarship Fund** was established in 1985 by the members of the First United Methodist Church, Mt. Gilead, North Carolina, to commemorate a generous bequest from Mr. Little and to affirm the important relationships between the church and the Divinity School.

**The Robert B. and Mary Alice Massey Endowment Fund** was established in 1980 by Mr. and Mrs. Massey of Jacksonville, Florida, for the support of excellence in ministry.

**The Robert McCormack Scholarship** was established by the trustees of The Duke Endowment to honor Robert McCormack, chairman of the board of The Duke Endowment at the time of his death in 1982.



**The McClanahan Endowment Fund** was established in 1993 by Arthur Lee McClanahan, Divinity School Class of 1975, of Fairfield, Connecticut, to provide funds for the Divinity School Library for the purchase of materials in practical theology in the area of evangelism.

**The J. H. McCracken Memorial Scholarship Fund** was established in 1947 by Dr. J. H. McCracken, Jr., of Durham, North Carolina, in memory of his father, the Reverend Jacob Holt McCracken, a Methodist minister who served churches in North Carolina for fifty years.

**The C. Graham and Gradie Ellen E. Mitchum Fund** was established in 1985 by Dr. and Mrs. Kenneth E. Mitchum of Pittsboro, North Carolina, in memory of his father, a lay preacher, and in honor of his mother. The fund provides scholarships for students who have significant financial needs and a strong commitment for ministry in the local church.

**The J. Alex and Vivian G. Mull Scholarship Endowment Fund** was established in 1987 by the grant committee of the Mull Foundation of Morganton, North Carolina, as a memorial to Mr. and Mrs. J. Alex Mull who were leaders in education, business, and the Church. Priority is given to students from Burke County, North Carolina.

**The Myers Park Scholarship Fund** was established in 1948 by members of the Myers Park United Methodist Church, Charlotte, North Carolina, for ministerial education.

**The Needham-Hauser Scholarship Endowment Fund** was established in 1986 by Duke University graduates Eugene W. Needham and his wife, Antoinette Hauser Needham, of Pfafftown, North Carolina, to provide assistance for students committed to the parish ministry. Preference is given to persons from the Western North Carolina Conference of the United Methodist Church.

**The W. Fletcher Nelson Scholarship** was established in 1980 by friends of W. Fletcher Nelson, Duke Divinity School Class of 1930, of Morganton, North Carolina. He was responsible for the fund-raising efforts which enabled renovations and the building of the new wing of the Divinity School.

**The W. R. Odell Scholarship** was established in 1946 by the Forest Hills United Methodist Church, Concord, North Carolina, to honor Mr. Odell, a distinguished layman.

**The Roy and Rae P. Old Scholarship Fund** was established in 1984 by Marshall R. Old, Divinity School Class of 1975, of Moyock, North Carolina, to honor his parents and to provide assistance for students preparing for service in parish ministry.

**The Ormond Memorial Fund** was established in 1924 by Dr. J. M. Ormond, Trinity College Class of 1902, and Mrs. Ormond, in memory of his parents, Mr. and Mrs. J. J. Ormond. The fund income maintains the collection of books on the rural church.

**The Parish Ministry Fund** was established in 1968 to provide continuing education opportunities for selected parish ministers and lay leaders from the Western North Carolina Conference of the United Methodist Church. The fund sponsors seminars, short study courses, and makes special grants for full-time study leaves. The program is administered by the Divinity School with the assistance of the Parish Ministry Fund's Board of Directors.

**The Emma Leah Watson and George W. Perrett Scholarship** was established in 1984 by Mrs. Perrett of Greensboro, North Carolina, to provide scholarships for students preparing for the ministry in the local church.

**The Ray C. Petry Scholarship Endowment Fund** was established in 1989 by Dr. Petry, James B. Duke Professor Emeritus of Church History, of Dayton, Ohio, to encourage colleagues and students in their pursuit of excellence.

**The Marshall I. Pickens Scholarship Endowment Fund** was established in 1991 by The Duke Endowment of Charlotte, North Carolina, to honor Mr. Pickens, Trinity College Class of 1924, and to celebrate his distinguished fifty-three year career with The Duke Endowment, one of the nation's largest private foundations.

**The Cornelius Miller and Emma Watts Pickens Memorial Fund** was initiated in 1966 by the Pickens brothers to honor their parents. The fund income helps to support the Divinity School Media Center.

**The Maude Simpson Pitts Scholarship Endowment Fund** was established in 1986 by Mr. and Mrs. Noah O. Pitts, Jr., of Morganton, North Carolina, in memory of his mother. The fund provides support for students who are committed to parish ministry.

**The William Kellon Quick Endowment for Studies in Methodism and the Wesleyan Tradition** was established in 1985 by Mr. and Mrs. Stanley S. Kresge of Pontiac, Michigan, to support teaching, research, and publication in Methodist studies and to honor their pastor, William K. Quick, Divinity School Class of 1958.

**The Henry Haywood Robbins Scholarship Endowment Fund** was established in 1989 by Mr. and Mrs. Edwin B. Robbins of Pascagoula, Mississippi, in memory of his father, who attended Trinity College in the 1890's and was a Methodist pastor in western North Carolina, and his brother, H. Haywood Robbins, Jr., Law School Class of 1932, who was an attorney in Charlotte, North Carolina.

**The McMurry S. Richey Endowment Fund** was established in 1994 by Russell E. Richey, Douglas G. Richey, and Thomas S. Richey (Law School, Class of 1975) to honor their father and to commemorate the many years of service by members of the Richey family on the Divinity School faculty. McMurry S. Richey (Trinity College, Class of 1936; Divinity School, Class of 1939; Graduate School, Class of 1954) is a professor emeritus of theology and Christian nurture and Russell Richey is professor of church history and associate dean for academic affairs. The fund income is for unrestricted purposes.

**The Roberts-Earnhardt Endowment Fund** was established in 1991 by Daniel T. Earnhardt, Trinity College Class of 1962, Divinity School Classes of 1965 and 1966, of Greenville, North Carolina, to honor his parents, Daniel Edwin and Esther Roberts Earnhardt. The fund provides unrestricted resources for the Divinity School Library.

**The Gilbert T. Rowe Memorial Scholarship Fund** was established in 1960 through the generosity of alumni and friends of the Divinity School to honor the memory of Dr. Rowe, professor of systematic theology.

**The Elbert Russell Scholarship** was established in 1942 by the Alumni Association of the Divinity School in honor of Dr. Russell, professor of biblical theology and dean of the Divinity School, 1928-1941.

**The John W. Shackford Endowment Fund** was established in 1985 by Margaret S. Turbyfill, Trinity College Class of 1940, of Newport News, Virginia, to provide student scholarships in memory of her father, John W. Shackford, who was a leader in religious education with the former Methodist Episcopal Church, South.

**The E. Clifford and Jane S. Shoaf Endowment Fund** was established in 1993 by Mr. Shoaf, Divinity School Class of 1953, and his wife of Edenton, North Carolina, to provide funds for the Divinity School Library especially to enhance the research materials in Methodist studies. He served during 1972-78 as director of field education for the Divinity School.

**The Gaston Elvin Small Family Fund** was established in 1984 by Mr. and Mrs. Gaston E. Small, Jr., of Elizabeth City, North Carolina. As an unrestricted endowment, the fund honors the Small family and their strong ties with Duke University, the Divinity School, and the United Methodist Church.

**The Dolly L. Spence Memorial Scholarship Fund** was established in 1984 by Royall H. Spence, Sr. of Greensboro, North Carolina, in memory of his wife and to provide financial support for ministerial students.

**The Hersey E. and Bessie Spence Fund** was established in 1973 by a gift from the estate of Hersey E. and Bessie Spence and designated to establish a chair in Christian education.

**The Hersey E. Spence Scholarship** was established in 1947 by the Steele Street United Methodist Church of Sanford, North Carolina, in honor of their former pastor and late professor in the Divinity School.

**The David Johnson and Mary Woodson Sprott Fund** was established in 1982 by the Sprott family of Winter Park, Florida, to provide student scholarships in appreciation of Duke-educated ministers.

**The Emorie and Norman Stockton Scholarship Endowment Fund** was established in 1988 by Bishop and Mrs. Thomas B. Stockton, Divinity School Class of 1955, of Richmond, Virginia, in memory of his parents.

**The Earl McCrary Thompson Scholarship** was established in 1974 in honor of the late Earl McCrary Thompson, Trinity College Class of 1919, to support education for ministry.

**The Walter McGowan and Minnie Daniel Upchurch Fund** was established in 1971 by W. M. Upchurch, Jr., an alumnus of Duke University and a member of its Board of Trustees, honoring his parents. The fund income is used for the purchase of materials in the area of sacred music and is supplementary to a collection of materials given by Mr. Upchurch to the Divinity School Library.

**The T. C. Vaughan Memorial Endowment Fund** was established in 1990 by Dr. Thomas J. Vaughan of Lexington, Kentucky, to honor his great-grandfather, a circuit-riding Methodist preacher, and with gratitude for the effectiveness of Duke alumni in ministry. The fund is an unrestricted income source for the Divinity School, which means it may be applied to scholarships, library acquisitions, building needs, or general programs.

**The Wilson O. and Margaret L. Weldon Fund** was established in 1983 by a friend to honor Dr. Weldon, Divinity School Class of 1934 and trustee-emeritus of Duke University, and Mrs. Weldon. Income from the fund is for student scholarships.

**The A. Morris and Annabel Williams Fund for Parish Ministry** was established in 1983 by Mr. and Mrs. A. Morris Williams, Jr., of Gladwyne, Pennsylvania, both graduates of Duke University. This fund honors A. Morris Williams, Divinity School Class of 1932, and the late Mrs. Williams. Income from the fund is designated for scholarships, continuing education, and creative program support for persons committed to Christian ministry through the local church.

**The Ruth W. and A. Morris Williams, Jr., Professorship** was established in 1988 by Mr. and Mrs. A. Morris Williams, Jr., of Gladwyne, Pennsylvania, both graduates of Duke University. The endowment income is restricted for use by the Divinity School for a professorship in the field of parish ministry studies.

**The C. Carl Woods, Jr., Family Scholarship Endowment Fund** was established in 1988 by Mr. Woods of Durham, North Carolina, to celebrate the many ties between three generations of his family and Duke University.



## Additional Resources

**The Duke Endowment**, established in 1924, provides under the Maintenance and Operation Program, field education grants for students of the Divinity School who serve in rural United Methodist churches under the Endowment and Field Education Program.

**The James A. Gray Fund** was presented to the Divinity School in 1947 by James A. Gray of Winston-Salem, North Carolina, for use in expanding and maintaining its educational services.

**The United Methodist Church** makes a substantial contribution to the Divinity School by designating a percentage of its Ministerial Education Fund and World Service Offerings for theological education. The General Board of Higher Education and Ministry makes available annually two national United Methodist scholarships.

**The Dempster Graduate Fellowships** are awarded annually by the United Methodist Board of Higher Education and Ministry to graduates of United Methodist theological schools who are engaged in programs of study leading to the Ph.D. degree in religion. A number of Divinity School graduates have held these fellowships.



*Field Education*





## **A Program for Ministerial Formation**

Field education is a vital and exciting component of the Divinity School's academic program. Ministry contexts provide abundant opportunity for action as well as reflection, enabling students to work with their personal and spiritual gifts and experiences as well as the rich conceptual material offered by the Divinity School. In these settings students are typically (1) working to clarify and test their calls to ordained or lay ministry; (2) exploring ministerial roles and identity; (3) building and strengthening the diverse skills required for ministry; and (4) learning to understand and approach ministry theologically as well as psychologically, sociologically, and organizationally.

## **Field Education Credit Requirements**

Two units of approved field education placement are required for graduation in the Master of Divinity degree program and one for the Master in Church Ministries (M.C.M.) program. The Th.M. and M.T.S. degrees have no field requirements. A unit is defined by one term placement, either a full-time summer term of ten or twelve weeks or an academic term of thirty weeks at ten hours per week. To be approved, the field setting must provide ministerial identity and role, distinct ministerial tasks, qualified supervision, a service-learning covenant, regular supervision conferences, and effective evaluation. Each unit also requires participation in orientation and reflective seminars, or courses.

To qualify for credit the student must apply and be approved for a credited placement, develop and complete a learning covenant with acceptable quality of work, cooperate with the supervisor, participate in a reflective seminar, and prepare an evaluation of the experience. Evaluation will be done by the field supervisor, student, lay committee, and field education staff.

Prerequisite for the initial field placement is enrollment in or completion of Church's Ministry 10. Prerequisite for the second placement in the M.Div. program is completion of sixteen academic credits and the first field placement. The first placement must be completed within twelve months of CM 10, the second immediately prior to or concurrent with CM 100.

## Guiding Ministerial Formation

Development of readiness for ministry is the responsibility of each student. If the field education staff has reservations about a student's readiness for a field placement, they will specify requirements preparatory to the assignment. If the student requests, a committee consisting of the student's faculty adviser, a member of the Field Education Committee, and a member of the field education staff will review the staff's decision. Divinity School admissions materials, faculty perceptions, evaluation by the field education staff, and, if necessary, additional professional evaluation will be used. This committee will approve the field assignment or refer the student to remedial avenues of personal and professional development, including, if necessary, a leave of absence or withdrawal from school. Such action will be referred to the Academic Standing Committee for inclusion in assessment of that student's progress toward graduation. When, for whatever reason, a student's evaluation from a field setting raises questions about his/her ministerial learning and/or growth, or his/her use of the setting for those purposes, the same committee may be convened to assess the student and the experience in order to make appropriate recommendations to the Academic Standing Committee.

## Field Settings for Ministerial Formation

Students may elect to meet their field learning requirement in one of several ways. They may elect a voluntary ministry avenue. The setting must meet the requirements set by the Divinity School, but students, with the direction of the Office of Field Education, have latitude in selecting their settings. They must invest a minimum of 300 hours in preparation and presence, a minimum of ten and a maximum of thirty weeks in the setting and comply with the requirements specified by the Divinity School.

Students may use a setting where they have found employment by a congregation or church agency. Again, approval by the Office of Field Education for credit, 300 hours of preparation and presence, at least ten hours per week, plus compliance with Divinity School requirements regarding setting, supervision, and structure are required.

Finally, field placements are often made in settings that have been developed and approved by the Divinity School. These offer opportunities for ministerial service with supervision, appropriate identity, and evaluation. All these settings meet field placement requirements.

A variety of ministry settings is available for particular student goals: parish settings (rural, suburban, and urban patterns); institutional settings (public housing, mental retardation centers, and retirement homes); campus ministry settings (positions on the campuses of a variety of schools as well as internships in college teaching); and urban ministries.

While the Divinity School offers this rich diversity of settings for personal and ministerial formation, the large majority of placements fall in local churches in small communities. Because of the Divinity School's ties with the United Methodist Church, most field placements occur in that tradition. However, the Divinity School will do everything possible to assist every student in finding at least one placement in his or her own denominational tradition. Each student is required to complete one credit in a local church setting, unless permitted by the Field Education Committee to do otherwise.

## Internship Program

A full-time internship embraces both a full-time salaried position and a learning commitment in a single context over a six- to twelve- month period. These opportunities provide in-depth practice of ministry skills particular to the student's field placement setting and vocational goals. Internships must encompass an advanced level of specialized field experience that is more complex and extensive in its serving and learning potential than the basic field education short-term placement. The internship may be

individually designed to meet the needs and interests of the student, provided that the plan includes a student learning covenant, approved supervisory standards, and an investigation-research project acceptable to the assigned faculty adviser. When these components are satisfactorily met and the evaluation reports are filed, credit for up to two courses may be assigned to the internship. No additional academic credit may be accumulated during the intern year. Grading for the two course credits will be on a pass/fail basis.

Internship settings may be student-initiated or negotiated by the school. In either case an agency contract covering all agreements must be made and filed with the Office of Field Education. Types of settings occasionally available for internship placement include campus ministry and college chaplaincy positions; parish ministry positions such as associate pastor or director of education; and institutional positions.

To be eligible to register for an internship, the student must have completed at least one-half of his/her degree program and be registered as a student in good standing in the Divinity School. Application forms and processing for internships will be done through the Office of Field Education.

## Students Serving As Pastors

Students frequently serve as pastors of churches, or part-time associates, during the period of their study in the Divinity School. These appointments or calls are arranged by the appropriate denominational official or body. The Divinity School recognizes this arrangement and recommends that the student consult with the Office of Field Education, as agent of the dean, before accepting an appointment as pastor or associate pastor.

The Office of Field Education cannot arrange these appointments or calls. This is within the jurisdiction of denominational authorities, and students should initiate their own arrangements. The Office of Field Education, however, requires a student application for appointment prior to accepting one. The office also provides area church officials with recommendations for students upon request.



1995 Project BRI(DDD)GE team.



Students who serve in these capacities ordinarily may enroll in no more than three courses per semester, thus requiring eight semesters to complete the Master of Divinity degree. Student pastors are not permitted to enroll in summer study of any kind. Relaxation of this regulation requires the permission (on the appropriate form) of the supervising church official, the field education staff, and the associate dean for curricular affairs. *Students are strongly and actively discouraged from attempting to commute more than fifty miles one-way on a daily basis.* Extensive commuting will jeopardize the student's academic program, health, ministry, and family life.

In keeping with the goal of the school to develop competence in ministry, students should use their pastoral appointments as learning contexts for field education programs initiated by the school. Student Pastor Mentoring groups, comprised of four to six students together with a learned pastor, meet weekly for counsel, direction, and critical theological reflection. Annual evaluation is required in the pastor's parish. If all the conditions outlined for credit are met, and all reports are completed and filed at the appropriate time, credit may be extended. If, however, the parish setting proves inadequate for the student's needs for ministerial growth and development, the field education staff will convene a review committee consisting of the student's faculty advisor, a member of the Field Education Committee, and one of the field education staff to review the student's needs and take appropriate action to assist the student in growth. Examples of such action are: requiring an alternative field experience, or a basic unit of clinical pastoral education, psychological evaluation, personal therapy, leave of absence from the school, etc.

## Field Education and Clinical Pastoral Education

Students may use a basic unit of clinical pastoral education successfully completed in an accredited CPE center to fulfill either the first or the second field education requirement. To receive field education placement credit, students must have the CPE center mail directly to the Office of Field Education the original or certified copy of the supervisor's final evaluation indicating the unit was successfully completed and a full unit of credit extended. The field office will then notify the Divinity School registry to this effect, and both academic and field education placement credit may be given. CPE must be concurrent with or within twelve months following CM 10. For the second field education placement, CPE must be taken immediately prior to or concurrent with CM 100. Field Education credit may be granted on the basis of the field education staffs approval of both program and experience.



## *International Programs*



*Passion of Christ at Temple de la Sagrada Família, Barcelona.*



## A Global Perspective for Duke Divinity School

We need to ensure that all our students will have exposure to international ideas and information during their time here. This can be accomplished in a number of ways—by encouraging them to spend time abroad, by increasing the number of students and faculty who come to Duke from other countries, by designing courses and extracurricular programs with an international dimension. Most fundamentally, however, we must cease to think of “international” experiences as exotic, separate from our basic experience each day. We should make international links and contexts an integral part of the way we think and live at Duke; we should work past special enclaves and earmarked programs towards the day when everything we do will be informed by our global consciousness.

President Nannerl O. Keohane, *Inaugural Address*, October 23, 1993

When Dennis M. Campbell became dean of the Divinity School in 1983, his first administrative addition was a Committee on International Studies and Programs. “I believe,” he wrote, “that the future of theological education must be seen in a global perspective and that persons preparing for ministry must encounter the reality of Christianity in the context of our whole world.”

Since that time, there has been a gradual expansion of opportunities for study or travel abroad and an increase in faculty participation in programs outside of the United States. Some of these are listed below. The faculty and administration of the Divinity School stand ready and eager to assist with any proposals for a broadening of theological studies in a global context.

**The Home Country.** Duke Divinity School continues to attract students from other countries who make a significant contribution to the community. Every year, we have about ten international students from several different countries. Because of financial limitations and the maturation of higher theological institutions in other parts of the world, a majority of the international students come for a shorter period of time and for advanced degrees.

Furthermore, the Lecture Program Committee brings a succession of distinguished scholars and church leaders to speak in the Divinity School. Among these in the last few years have been the following:

The Reverend Dr. Bonganjalo Goba, Soweto, South Africa  
Professor Morna Hooker, University of Cambridge, England  
The Reverend John Dunlop and Father Brian Lennon, Belfast, Northern Ireland  
Professor Rudolph Bohren, Heidelberg University, Germany  
Professor John Milbank, University of Lancaster, England  
Professor Norman Young, Theological Hall, Victoria, Australia  
Henry Thiagaraj, Madras, India  
Professor Nicholas Lash, University of Cambridge, England  
Professor Lesslie Newbigin, Birmingham, England  
Father Gustavo Gutierrez, Lima, Peru

Father Eugenij Grushetsky, Minsk, Bjelorussia

Professor Leonard D. Hulley, University of South Africa, South Africa

Hans Norbert Janowski, editor of "Evangelische Kommentare," Stuttgart, Germany

In addition to courses in world Christianity (including Theology in Context: The Church in Latin America, Theologies of Third World Women, and Liberation Theologies) and courses in the history of religion under the graduate program, various other departments offer courses related to international studies: War in the Christian Tradition, Ethics in World Religions, Marxist Ideology and Christian Faith, Food and Hunger, among others. Professors Geoffrey Wainwright from Great Britain and Teresa Berger from Germany add an international and ecumenical flavor to the faculty.

**Travel Seminars.** For a number of years, under the supervision of the Center for Continuing Education, faculty members have led travel seminars to study the role of the Church in significant areas of social and cultural development. Each year the Divinity School conducts groups of seminary students, faculty, and ministers to Mexico, generally during the spring recess.

A three-seminary travel seminar to the Middle East, involving five Duke students, took place in the summers of 1992, 1993, 1994, and 1995.

**Study Abroad.** At the present time the one regular, on-going program of study abroad is an exchange with the University of Bonn, West Germany. Each year one German student is enrolled for a year at Duke, while an American student is selected to study in Bonn. This program, carried on for many years, has been augmented by faculty seminars: in May 1983 on the theme of "Luther's Understanding of Human Nature and Its Significance for Contemporary Theology," with a follow-up at Duke in March 1985, focusing on North American anthropology and Reinhold Niebuhr. In 1995, the Duke-Bonn faculty seminar concentrated on biblical issues. The Divinity School is currently developing a regular exchange program with the Methodist Church in Peru. As a part of this exploration, one of our students and one of our faculty members spent the spring semester of 1989 and the fall semester of 1992 in Lima, Peru. In 1991, four of our faculty members went on a travel seminar to Peru to strengthen Duke's links with the churches there. A student-faculty study seminar to Peru is also planned for 1997.

Duke University is one of the supporting members of the American Schools of Oriental Research. Accordingly, students and faculty in the Divinity School have the privilege of attending the Albright Institute of Oriental Research in Jerusalem, the American Center of Oriental Research in Amman, and other similar institutions without charge for tuition. They may also compete for the four fellowships offered annually by the schools.

Individual students from time to time have made private arrangements for study abroad. These have most often taken place in England or Scotland, with academic credit usually transferrable toward the Duke degree. Most recently, one of our students fulfilled her field education requirement through working for a semester within the Anglican Church in Mozambique, while two others spent a year in Cochabamba, Bolivia, working in a shelter for women and children on the streets of the city. Invitations have been extended from such widely-scattered institutions as Wesley College, Bristol, England; Trinity Theological College, Singapore; United Theological College, Bangalore, South India; and the School of Theology, Sao Paulo, Brazil. The International Studies Committee will assist with contacts and information for individual proposals.

**International Service.** The involvement of Duke Divinity School with international institutions and cultures has always gone beyond one-way educational opportunities. Over the years faculty, alumnae and alumni, and students have lived and worked in locations abroad, under both ecclesiastical and secular auspices. The latest listings include approximately a hundred seminary graduates in ministry overseas.

Divinity students often participate in international service projects on a short-term basis. Several have taken part in evangelistic or building work-teams, chiefly in the Caribbean. At least one spent a summer in Japan holding youth services under the auspices of OMS International. Faculty, too, are engaged in a variety of activities outside the United States. In addition to innumerable conferences and lectures in Canada and Europe, professors have taught and given papers in countries of the Two-Thirds World: for example, Professor Langford in Singapore, and Professor Wainwright in Ireland, Israel, Singapore, Australia and New Zealand. Recently Professor Wainwright lectured in Uganda and Estonia, and in the spring of 1995 he accepted appointment as visiting professor at the Gregorian University in Rome. Professor Herzog spent the spring semester of 1990 and the summer and fall of 1992 at the Biblical Theological Seminary of the Methodist Church in Peru and at the University of Lima in Peru.

**Our World Parish.** "The world is my parish," said John Wesley. Today that "mission field" has become an international Christian community with much to share. Through its international programs, the Divinity School seeks to contribute to a "covenanting towards unity" with the goal of full communion among the churches of the world. We discover through our efforts as a worldwide community of faith that we are inseparable not only as members of the human family, but, above all, as members of the church catholic. We need to embody this inseparable communion locally by learning from each other, standing in solidarity with each other, celebrating our common faith, and growing together. Through its international programs, the Divinity School seeks to live out its faith in a church family that transcends national, racial, denominational, geographic, gender, political, and economic boundaries.



*Dean Dennis Campbell with Rector Rosanna Panizo, Academic Dean Hector La Porta, and Peruvian exchange student Johnny Llerena Zegara of the Biblical Theological Seminary in Peru.*



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## *Black Church Affairs*



*Gardner C. Taylor preaches in Duke Chapel.*

## The Office of Black Church Affairs

The Office of Black Church Affairs has two principal objectives: (1) to assist black students in deriving the greatest possible value from theological education; and (2) to call the entire Divinity School community to serious and realistic dialogue with the Black Church and the black community. In keeping with these objectives, the Office of Black Church Affairs provides the following programs, activities, and services:

**Academic Study.** American theological education has long ignored the concerns and contributions of the black religious experience, a circumstance that the Divinity School curriculum addresses through (1) offering courses whose content and methods draw upon scholarship about and by African-Americans and (2) the inclusion of African-American scholarship in courses throughout the curriculum.

**Preaching and Lecture Series.** Fall and spring preaching and lecture series provide frequent opportunities to hear outstanding black preachers in Divinity School classes and worship services. The Gardner C. Taylor Preaching Series brings outstanding black preachers to the campus, and the Martin Luther King, Jr. Lecture Series brings to the Divinity School community lecturers of national stature to address the issues of justice, peace, and liberation in relation to the insights of the Gospel and the black religious experience.

**Continuing Education.** In cooperation with the Center for Continuing Education, the Office of Black Church Affairs provides several programs for black pastors in the region, including the Gardner C. Taylor Black Preaching Series, the Martin Luther King, Jr. Lecture Series, and seminars on black concerns and issues. Occasional conferences, colloquies, symposia, and the Annual Convocation and Pastors' School supplement these offerings.

There are opportunities for academic study for all qualified black pastors and lay persons. The extensive holdings of the Divinity School Library and the services of the Henry Harrison Jordan Loan Library are also available upon application to the librarian of the Divinity School.

**Church Relationships.** Through the Office of Black Church Affairs, the Divinity School reaches out to the black churches in the Durham-Raleigh vicinity. Such relationships not only afford excellent field settings for ministerial study and work, but they also provide a laboratory in which both blacks and whites together can gain wider knowledge of, deeper appreciation for, and increased sensitivity to the issues and urgencies of black culture.

The Office of Black Church Affairs also acts as a liaison with several clergy and community groups including the Interdenominational Ministerial Alliance and the Durham Ministerial Association.

The Office of Black Church Affairs provides counsel and advice to prospective black seminarians in undergraduate schools and encourages inquiries concerning study opportunities available at Duke Divinity School. For further information, contact the Office of the Director of Black Church Affairs, The Divinity School, Duke University, Box 90971, Durham, North Carolina 27708-0971.

*Continuing Education*





## **The Center for Continuing Education**

Through the Center for Continuing Education the Divinity School offers extensive opportunities in education for the Church's ministry. The Divinity School provides a year-round program of residential seminars and conferences, extension seminars and consultations, and special services to clergy and churches throughout the nation, including the annual Benjamin N. Duke fellowship for clergy sabbaticals.

## **Admission and Scholarships**

Conferences, churches, and other supporting groups and institutions have made available through the Divinity School designated funds to assist in continuing education for ministry. Inquiries, applications for admission, and requests for continuing education scholarships for residential seminars should be directed to: Director of Continuing Education, The Divinity School, Box 90966, Duke University, Durham, North Carolina 27708-0966 (919) 660-3448.

## **Extended Study Leave Program for Clergy**

Each year clergy nationwide request the opportunity to further their studies through the use of the Divinity School Library and other Duke libraries. Other clergy wish to meet with specific Divinity School professors, seeking guidance in their reading and study. Still others have a particular topic or subject they wish to pursue and want the director of continuing education to point them to books, seminars, or professors that might help them. The Divinity School is happy to receive clergy for a study leave under the following guidelines:

1. The pastor submits a short biographical sketch and a study proposal.
2. The director of continuing education assesses the appropriateness of the proposal for the pastor and for Duke. When a pastor is granted permission to come to Duke on a study leave, the director of continuing education supervises the study.
3. CEU's are awarded after a discussion with the director of continuing education and a report from the pastor.

## Visiting Scholars Program

The Center for Continuing Education provides carrel space and library privileges for scholars who wish to spend an extended time at Duke while on sabbatical leave. Those interested in this program should call or write to the director of continuing education.

## National Institute for New Church Development

Duke Divinity Schools Center for Continuing Education, in cooperation with the North Carolina and Western North Carolina Annual Conferences, holds an annual institute for pastors involved in the process of beginning and sustaining new local churches. This summer institute is appropriate for pastors who are either beginning a new church, or pastors who desire to be better equipped to start new churches. A certificate of completion is awarded to those who complete four weeks or two consecutive summers in the institute.

## The Convocation and Pastors' School

The annual Divinity School Convocation and Pastors' School, a cooperative endeavor with the North Carolina and Western North Carolina Conferences of the United Methodist Church through the Board of Managers of the Pastors' School, brings together ministers, laypersons, students, and faculty for a series of lectures, sermons, and courses, along with alumni reunions and social occasions. The 1996 Convocation will be held on October 21-23.

**The James A. Gray Lectures.** These annual lectures, established in 1950 as part of a bequest made in 1947 by James A. Gray of Winston-Salem, North Carolina, are delivered in the context of the Divinity School Convocation and Pastors' School.

**The Franklin S. Hickman Lectures.** This lectureship was established in 1966 as part of a bequest by Mrs. Franklin S. Hickman in memory of her late husband, Dr. Franklin Simpson Hickman, professor of psychology of religion, Duke Divinity School, and dean of the Chapel, Duke University. This lectureship enables the Divinity School to bring practicing ministers of extraordinary qualities to lecture and preach in the Convocation and Pastors' School and to participate in Divinity School classes, worship, and informal sessions with students and faculty.

## Duke Lay Academy of Religion

The Lay Academy of Religion offers continuing education courses for all interested persons throughout the year with sessions in Durham, Greensboro, High Point, Charlotte, Fayetteville, and other locations. Courses are offered in the Bible, comparative religions, theology, Christian ethics, and other selected topics. Contact the Director of Continuing Education, Duke Divinity School, Duke University, Durham, North Carolina 27708-0966 or call (919) 660-3448 for more information and a current list of courses.

## Ministry in the Vicinity

Ministers and churches in the vicinity of Duke University are especially welcome to avail themselves of continuing education programs, facilities, and other services of the Divinity School and its faculty and students. They are invited to attend public lectures, visit with distinguished lecturers, participate in in-residence seminars and conferences, audit selected courses, study in the continuing education carrels, and use the resources of the Divinity School Library, the Henry Harrison Jordan Loan Library, and the tape recordings collection. Divinity School faculty, staff, and students are generally available for preaching, teaching, and other services in churches of the community and region.





*Additional Study Opportunities*

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## **The J. M. Ormond Center for Research, Planning, and Development**

This center was established in memory of the late Dr. J. M. Ormond, professor of practical theology of Duke Divinity School and director of the Rural Church Program under the Duke Endowment, 1923-48. The North Carolina Annual Conference established the J. M. Ormond Fund in 1951 as part of the special effort of the North Carolina and the Western North Carolina Conferences of the United Methodist Church to provide additional programs at the Divinity School. It is jointly supported by the Ormond Fund and the Rural Church section of the Duke Endowment.

The center has three purposes. First, it assists the Church in its ministry by providing research and planning services. Second, it provides training for ministerial students in church and community studies. Third, it contributes through basic research to the understanding of the nature and functioning of the Church. Emphasis is given to research and planning studies of rural United Methodist churches in North Carolina.

## **Programs in Pastoral Psychology**

Programs in pastoral psychology beyond the studies incorporated in the M.Div. curriculum are provided in cooperation with Duke University Medical Center. Two such programs are available.

1. The Master of Theology degree with a major in pastoral psychology is ordinarily a calendar year program beginning the first full week in June. However, upon the recommendation of the staff, candidates with a quarter or more of clinical pastoral education may begin their program in September. The candidate may plan one of two programs or concentrations:

- a. concentration in pastoral theology relating psychology and theological understanding to professional ministry, especially the parish, through course work and supervised field or clinical experience; and
- b. concentration in pastoral care and an introduction to the field of pastoral counseling through course work and an intern year in clinical pastoral education.

A quarter of clinical pastoral education is considered a prerequisite for all programs. Students who wish to complete the intern year in CPE and earn a Master of Theology degree will normally need two years to complete the program.

Students in CPE may not have other field education appointments or employment. However, a CPE unit will, when satisfactorily completed, count as one field education unit if taken in relation to either Field Education Seminar I or II. Only one field education requirement may be fulfilled by CPE.

In the context of clinical pastoral education, various professional goals may be sought, including general understanding and skills in pastoral care and specialization in pastoral counseling and clinical supervision. Persons specializing in pastoral counseling and pastoral psychotherapy will advance toward certification with the American Association of Pastoral Counselors and the American Association of Marriage and Family Therapists.

2. Single units of basic clinical pastoral education are offered each summer (beginning the first Monday in June and running for eleven weeks) and concurrent with the fall and spring semesters in the Medical Center. Single units of basic parish-based clinical pastoral education are available concurrent with the fall and spring semesters. When the unit is completed within one semester, the student may take two other courses in the regular M.Div. program. Two transfer course credits will be granted for a summer CPE quarter or two course credits will be granted for the unit taken during the academic year (unless a course credit has already been granted for PP 77, in which case only one additional credit will be given for the CPE unit). Only one unit (2 course credits) may be applied to the M.Div. or M.R.E.

Students are reminded that ordinarily no more than five courses out of twenty-four for the M.Div. degree should be taken in any one subdivision.

3. A one-year certificate or nondegree internship program in clinical pastoral education is available through the Duke Medical Center for persons who hold the Master of Divinity degree or its equivalent. Also, students who wish to pursue a pregraduation intern year are invited to apply, provided they have completed at least one year of theological education. The certificate, nondegree intern year can be done at any level of clinical pastoral education (basic, advanced, supervisory) that the candidate and the supervisory staff judge appropriate. These persons may enroll in the Divinity School as special students for a course or two each semester. Such training usually provides four units of certified clinical pastoral education credit.

Admission to either the basic unit or the internship Program of Clinical Pastoral Education is distinct from admission to the Divinity School. Applications for CPE enrollment are available in the Chaplains Service Office, Duke Medical Center.

For further information concerning any of these programs, write to Director, Programs in Pastoral Psychology, Duke Divinity School. See the section on the Master of Theology degree program.



## Women's Studies at Duke University

Divinity School students of all degree programs are encouraged to undertake a women's studies concentration as a part of their program. The concentration represents a body of interdisciplinary work in feminist scholarship separate from work on women in ministry. Students undertaking a women's studies certificate are assumed to have at least one undergraduate course in history, literature, sociology or psychology in order to begin concentration. **Students interested in undertaking a concentration need to consult the women's studies brochure as well as the special hand-out on "Graduate Work in Women's Studies" issued annually by the program. They must also make an appointment to talk with the director.** The purpose of this initial contact is to lay out a plan of study in women's studies that will coordinate with the course work in the Divinity School and to declare formally the intention to earn a certificate, insuring a place in the core course, WST 211.

Divinity School students who have had a significant interruption in their educational program, returning to the university after gaining extensive life experience, and those who have worked professionally in women-centered services outside the university, earn the certificate by taking at least 3 courses:

- WST 211, *A History of Feminist Thought*, an interdisciplinary seminar focusing on materials by and about women over time;
- CT 214, *Feminist Theology*, a course which presents the methodological issues of combining gender analysis with theological reflection and covers major feminist theologies by treating each of the traditional doctrines of systematic theology in terms of the pertinent feminist issues identified by these works;
- one additional course that is listed with the program, either within the Divinity School or from another university department.

Divinity School students who have entered Duke with less than five years of noncollegiate experience and no work history in women-centered services earn the certificate by taking at least 4 courses:

- WST 211;
- CT 214;
- two additional courses that are listed with the program, one of which must be offered by a department outside the Divinity School. This outside course may be cross-listed with the Divinity School and another department or professional school.

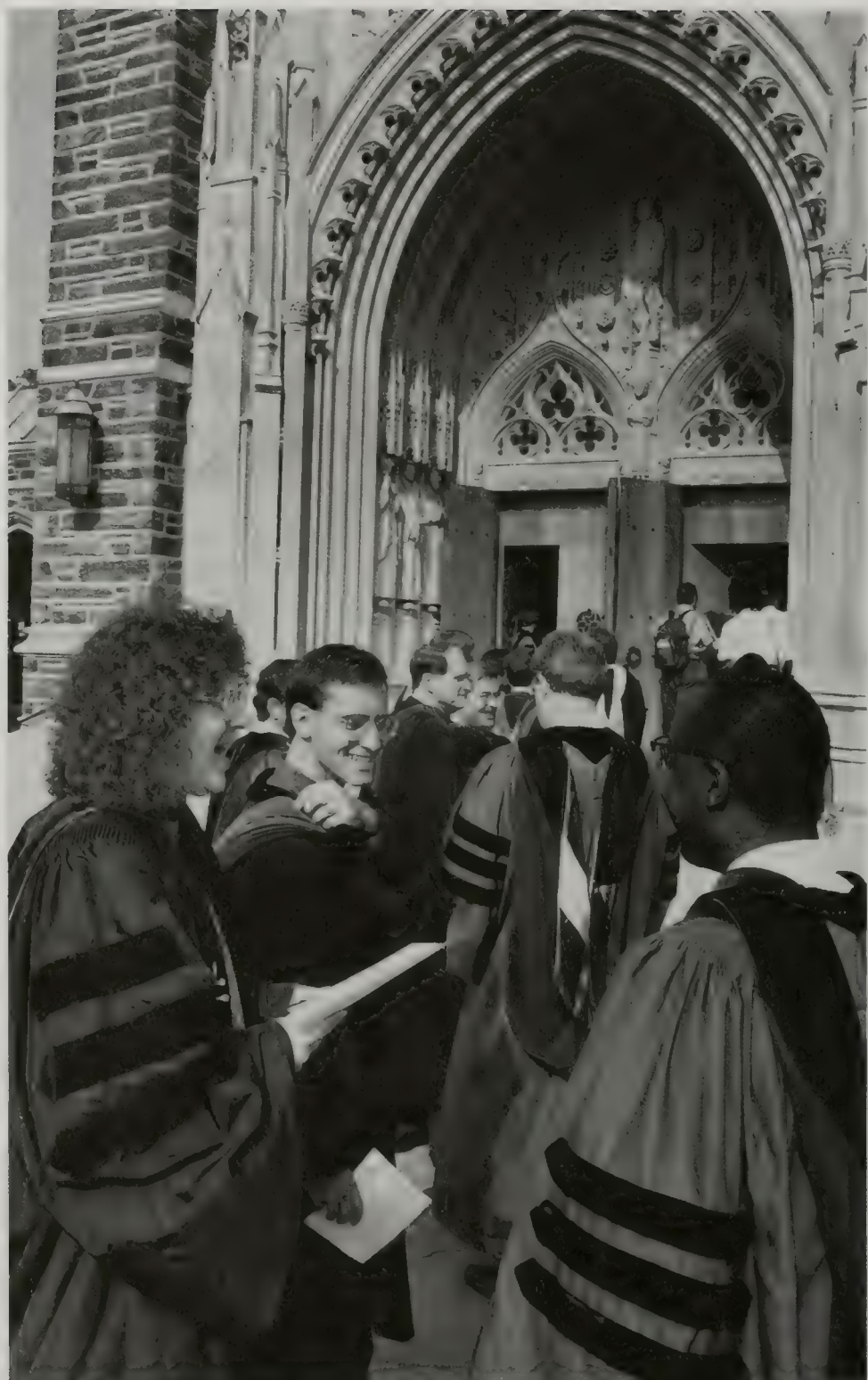
These policies are effective for those earning the graduate certification in Women's Studies after October 1, 1991.

(For relation of this opportunity to requirements of the several degree programs, see section on the curriculum. Note especially the "Required Limited Elective" in Theologies in Context that is part of the M.Div. degree.)

## Denominational Studies

The Divinity School offers the full array of courses required for ordained and diaconal ministry in the United Methodist Church (see below for particulars). It also offers courses in the history and polity of other denominations substantially represented in the student population. Baptist, Christian (Disciples of Christ), Episcopal, Presbyterian, and United Church of Christ courses occur on a regular, usually two-year cycle. Courses on other traditions have been arranged when needed and when staffing was available.

In 1989, the Divinity School began creating advisory committees on denominational studies. Three have been established to date, a Committee on Presbyterian Studies, a Committee on Baptist Studies (now known as the Board of Directors of the Baptist House of Studies) and a Committee on Episcopal Studies. Others may be established if needed.



The task of such committees is to take under care the persons from the respective traditions who are preparing for diverse ministries at Duke Divinity School. That care shall consist of advising students; counseling and preparing candidates for judicatory examinations or interviews; advising the Divinity School on the curricular and extra-curricular needs of those students; participating as appropriate and necessary in teaching of courses designed with students from the respective tradition in mind; creating an atmosphere at Duke University conducive to the effective preparation of that denomination's ministers; and holding events, services, and workshops instrumental toward the transmission of denominational practice, tradition, and doctrine.

These three denominational groups constitute sub-committees of the Curriculum Committee of the Divinity School. They relate to the Curriculum Committee on the performance of Duke students in interviews, examinations, and ministry; indicating how Duke courses and structures may have affected that performance; identifying specific courses or types of courses that would serve denominational needs; advising the Curriculum Committee, and through it the associate dean for field education and the Divinity School faculty, on practical theological and field education denominational needs; locating suitable placements for students and encouraging congregations to participate actively in the ministerial formation of Duke students; soliciting financial support for denominational study at Duke; exploring the feasibility, and if feasible, laying the foundations for a house of studies; reporting to the Curriculum Committee on its various activities; and at its last meeting in the spring and after consulting with the appropriate judicatories or constituencies, nominating a slate of members of the committee for the following academic year.

The Board of Directors of the Baptist House of Studies is composed of Divinity School faculty and students who are Baptists, members of the Divinity School administration, and representatives (both clergy and laity) of Baptist organizations. The Baptist House of Studies has a residential director who coordinates the program for Baptists and assists in teaching Baptist courses. The Committee on Episcopal Studies and the Committee on Presbyterian Studies are composed of area ministers, chaplains at Duke University, graduate and professional students, Divinity School faculty of that tradition, and members of the Divinity School administration.

Since their creation, these committees have proven effective in carrying out their mandates, disseminating information, establishing lines of communication, counseling students, and improving the Divinity School's effective care of persons preparing for ministry.

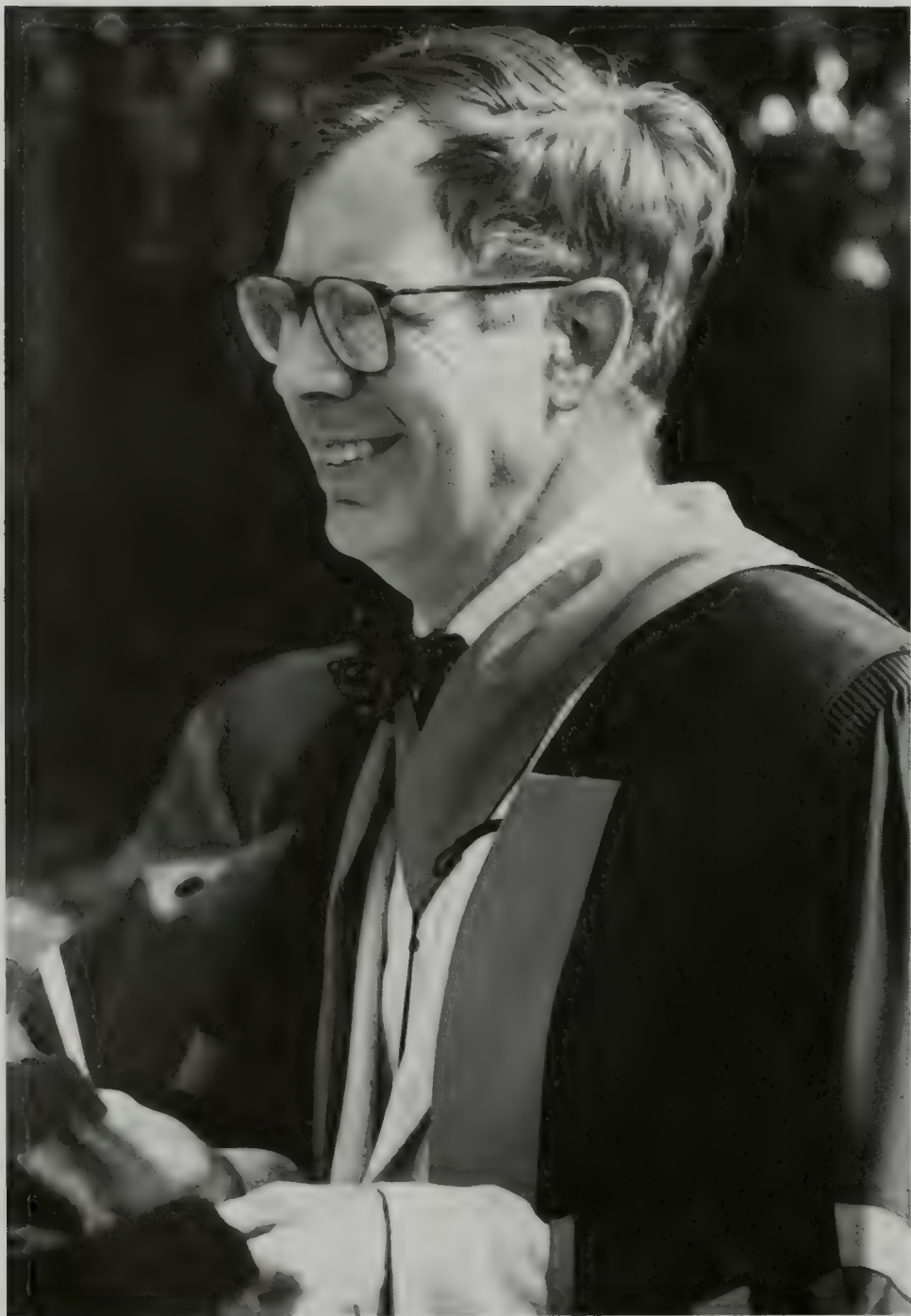
## **The Course of Study for Ordained Ministry**

In cooperation with the Division of Ordained Ministry of the Board of Higher Education and Ministry and the Southeastern Jurisdictional Conference of the United Methodist Church, the Divinity School hosts the Course of Study School for local pastors of the United Methodist Church. This school is in session for four weeks each summer, and the required studies for one full year can be completed in this period. This is not a part of the regular work of the Divinity School degree program, and no credit toward a seminary degree can be earned. The faculty includes representatives from the Divinity School and other church-related institutions. The forty-sixth session of the Course of Study School is being held June 24-July 19, 1996. For further information on the Course of Study School write to the Director, Course of Study School, Duke Divinity School, Box 90966, Durham, North Carolina 27708-0966.



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## *Curriculum*



*Associate Dean for Academic Programs Russell E. Richey.*

## **Degree Programs**

The academic work of the Divinity School presently embraces four degree programs: the Master of Divinity degree (M.Div.), ordinarily of three academic years; a one-year program beyond the basic degree, the Master of Theology (Th.M.); and two programs of two academic years, one leading to the degree of Master in Church Ministries (M.C.M.) and the other to the degree of Master of Theological Studies (M.T.S.). The M.C.M. is new in 1996-97, is a change in nomenclature, replaces the Masters of Religious Education (M.R.E.) and accommodates better than the M.R.E. the range of specialized ministries now exercised in Christian communities.

The first three are graduate-professional degrees; the M.T.S., inaugurated in September of 1987, is a general academic degree. Admission to candidacy for any of these degrees presupposes the completion of the A.B. or its equivalent.

Students preparing for ordination into the Christian ministry and requiring appropriate graduate-professional education will enroll for the Master of Divinity degree. Students whose acquired academic standing, under this basic degree program, entitles them to further specialized study may advance their command of selected theological disciplines by applying for an additional year of studies leading to the Master of Theology degree. Together, these two degree programs constitute a sequence. Although the Master of Divinity degree fulfills requirements for ordination by prevailing ecclesiastical standards, the Th.M. program may assist in assuring a larger measure of professional preparation. Application for admission to the Th.M. program is open to graduates of other schools who have completed the basic theological degree.

The Master in Church Ministries degree program is designed to prepare qualified persons, ordinarily not seeking ordination, for ministries in local churches or other organizations. The course of study is arranged to provide grounding in biblical, historical, and theological disciplines as essential background for instruction in and exercise of professional competence in curricular planning, teaching methods, and supervision of educational programs for various age groups. The M.T.S. provides an introduction to the theological disciplines as foundation for a graduate research degree (Ph.D); preparation for lay religious degrees other than Christian education; grounding for teaching, research, or practice in another field (e.g., history, psychology, music); enhancement of institutional roles; and personal enrichment.

The specific requirements for each of these degrees are found in the succeeding pages. Completed course work cannot be credited toward more than one degree. Reciprocal transfer of credit for course work taken under the M.Div., M.C.M., or M.T.S. programs requires the permission of the associate dean for academic programs.

## **Doctoral Studies Accredited by the Graduate School**

The Divinity School provides a substantial body of course offerings to an advanced level in biblical, historical, systematic, and contemporary theological disciplines that are accredited by the Graduate School and the faculty of the Divinity School, and lead to the Doctor of Philosophy degree. Sharing responsibility with the university Department of Religion for staffing and curricular provisions of this course of study, the Divinity School is the principal contributor to the program of graduate studies in religion.

However, the Ph.D. in religion is certified and awarded under the Graduate School, and the doctoral student's admission and matriculation are administered under that division of Duke University.

With few exceptions, most courses in the *Bulletin of Duke University: The Divinity School* carrying a 200 number or above and belonging to the fields noted above are applicable to doctoral programs of study. These courses are open to qualified M.Div., Th.M., M.C.M., or M.T.S. students by permission of the instructor.

Qualified persons who desire to pursue studies leading to the degree of M.A. or Ph.D. in religion, under the administration of the Graduate School, are advised to apply to the dean of that school. Inquiries concerning fellowships or specific requirements of the Program of Graduate Studies in Religion may be addressed to the director, 209 Divinity School.

## Administration of the Curriculum

Students are required at the time of each registration period to plan their course of study with the consultation and approval of their assigned faculty advisers. Such programs are subject to the review and approval of the Committee on Academic Standing, the dean, and the associate dean for academic programs. It is the responsibility of each student to see that all requirements for graduation (and for ecclesiastical ordination) are met, and that any special permission granted to deviate from the normal program is properly recorded on the personal files in the registry.

**Grading System.** The Divinity School employs the grading scale with the following letters, *A, B, C, D*, and that have been defined as follows: *A*, excellent; *B*, good; *C*, satisfactory; *D*, passing; *F*, failure; *WI*, withdrew illness; *W*, withdrew, discretion of the dean; *WF*, withdrew failing; *I*, incomplete; *P*, passed; *NC*, noncredit; *Z*, year course. At the discretion of the instructor, individuals or classes may in certain instances be graded simply as pass or fail. Such *P/F* grades shall be limited to no more than 25 percent of a student's total curriculum at Duke and will not be figured in the grade point average.

The denotations are defined as follows according to quality points: *A*, 4; *A-*, 3.7; *B+*, 3.3; *B*, 3.0; *B-*, 2.7; *C+*, 2.3; *C*, 2.0; *C-*, 1.7; *D+*, 1.3; *D*, 1.0.

Students earning a *D* (*D+*, *D*, *D-*) in a core or foundational course shall be obliged to retake and pass a regularly scheduled final examination in that course with a grade of *C-* or better. Students will be advised that their chances of passage will be enhanced by auditing the course. The grade on the re-take does not displace or alter the *D* grade or affect the g.p.a.

**Advanced Placement.** Students may, on the basis of undergraduate courses, a religion major, or other substantial preparation, be given advanced placement in one or more of the eight required subjects. Such placement normally presumes at least two college courses in a given area (e.g., Old Testament) with a satisfactory grade average and permits the student to fulfill the requirement by electing an advanced course in the same area (e.g., an advanced Old Testament course in place of Old Testament 11).

**Limited Program.** Students whose work after admission is not satisfactory may be placed on limited programs by the Academic Standing Committee and are required to reduce their course loads or to make other academic adjustments. Students who during the first year of Divinity School maintain less than a *C* (2.0) average, including failures, ordinarily will be required to withdraw from the school.

**Incompletes.** A student may petition the associate dean for academic programs to receive a grade of incomplete in a course. This petition must be filed in writing on the prescribed form with the registry on or before the last official day of classes of the semester in question. Such permission may be granted when a student, through some circumstances beyond control, such as illness, has been hindered from meeting the course requirements. Adjudication of the petition will rest with the associate dean and



the instructor concerned. The associate dean will communicate in writing to the student regarding the joint decision and any conditions attached thereto. An incomplete becomes either an *F* or a permanent incomplete unless it is removed through completion of assigned work by the following dates: for incompletes incurred in fall semester courses, 1 February; for incompletes incurred in spring semester courses, 1 September. The grade of permanent incomplete is reserved for instances in which the student's work in the course was substantial and of passing quality.

**Change of Courses or Withdrawal.** Students are permitted to change their course registrations, without incurring a penalty, during the prescribed drop/add period at the beginning of each semester. Any alteration in the number of courses must be officially reported and recorded. The adding of a course requires the permission of the instructor of that course as well as the student's faculty adviser. Any refund of tuition related to withdrawals will be according to the published schedule.

No student will be permitted to withdraw from a course after one-half of the semester without incurring failure, except for causes adjudged by the associate dean for academic programs to be beyond the student's control. Conditions of genuine emergency and not considerations of convenience will be determinative in considering requests, which must be submitted in writing on academic petition forms.

**Leave of Absence.** A student wishing to take a leave of absence for one or two semesters, and intending to return to a degree program in the Divinity School, should so notify the associate dean for academic programs in writing in advance. No leave of absence will be granted for more than one full academic year, although an emergency extension may be requested from the associate dean for academic programs.

**Withdrawals from School.** Students deciding to withdraw from the Divinity School, for whatever reason, should consult with their faculty advisers and the associate dean for academic programs, and must file a written statement of withdrawal prior to departure. All students who have officially withdrawn or whose leave of absence extends beyond one academic year but who wish later to return to the Divinity School will be required to reapply for admission, and provide whatever documentation is required by the director of admissions.

**Directed Study.** Students may, with permission of their faculty advisers and the instructors involved, take one or two units of Directed Study, preferably not in the same semester. These independent study courses under individual faculty supervision are ordinarily in subjects at an advanced level which cover material not available in the regular curriculum. Students wishing to take more than two courses by Directed Study must have permission from the associate dean for academic programs in consultation with the student's faculty adviser and the instructor who agrees to direct that study.

**Cognate Courses.** Students may, in consultation with their faculty advisers, take up to two graduate level courses in other departments of Duke University or at the University of North Carolina. Permission for more than two such cognate courses must be secured from the associate dean for academic programs. Courses in Duke's Department of Religion do not count within this limit.

**Graduation with Distinction.** Students who achieve a grade point average of 3.85 for overall academic records in the M.Div., M.T.S., and M.C.M. programs are granted the degree *summa cum laude*. Students with a grade point average of 3.65 or above are awarded their degrees, *magna cum laude*. Such distinction is calculated on the basis of letter grades only, totaling at least three-quarters of all courses taken at Duke, and will be indicated on the student's diploma.

**Part-Time Students.** Students taking less than three courses in any given semester are considered part-time students and are ineligible for financial aid from the school.

**Auditors.** Full-time students paying for at least three courses are permitted to audit additional courses at no extra cost, if space permits, with the approval of their advisers, the associate dean for academic programs, and the instructor of the class. Special students, part-time students, or persons not candidates for degrees in the university are charged an audit fee for each such course.

## The Basic Theological Degree—Master of Divinity

The faculty of the Divinity School views the curriculum as dynamic, not static; constantly endeavors to review the curriculum as a whole and to tailor individual courses to meet the needs of a rapidly changing world; and periodically commits itself to overall curricular change. Major curricular revisions were instituted in 1948, 1959, and 1967. Another such revision took effect in September of 1987.

This degree program is structured to elicit a positive response to: (1) the challenge to provide an adequate professional education for ministry; (2) the needed variability of ministries in today's complex world; (3) the norms of university education; and (4) the Christian tradition.

**Aims of the Curriculum.** The aims of the basic degree program focus upon four goals, four areas of personal and curricular responsibility, four lifelong tasks which should be strongly advanced during the seminary years.

1. *The Christian Tradition.* To acquire a basic understanding of the biblical, historical, and theological heritage.
2. *Self-Understanding.* To progress in personal and professional maturity, personal identity, life-style as an instrument of ministry, major drives, handling of conflict, resources, professional competency, etc. This is to be coupled with a sensitivity to the world in which we minister, its social forces, its power structures, its potential for humanization and dehumanization.
3. *Thinking Theologically.* To have the ability to reflect upon major theological and social issues and to define current issues in theological terms and theological issues in contemporary secular terms.
4. *Ministering-in-Context.* To have the ability to conceptualize and participate effectively in some form of contemporary ministry.

Goals of such scope cannot be neatly programmed in any curriculum, and the degree of achievement (in seminary and beyond) will vary with individuals and their own motives and incentives.

**The Basic Curriculum General Description.** Graduation requirements for the Master of Divinity degree consist of satisfactory completion of twenty-four courses, with an overall grade point average of C (2.0) or better; ten basic courses or their equivalent; three limited electives; two units of approved field education; and two evaluations.

The basic curriculum provides for foundational courses in biblical, historical, theological, and ministerial studies representative of the tradition and regarded as indispensable background for subsequent elective work and individual program information. These required courses total ten of the twenty-four courses necessary for graduation. They are Old Testament 11, New Testament 18, Church History 13 and 14, American Christianity 28, Christian Theology 32, Christian Ethics 33, Preaching 30, Church's Ministry 10 and 100. At least one course must be elected from three designated lists of offerings (available at registration) in advanced Biblical Studies, Black Church Studies, and Theologies in Context (the latter covers such fields as Women's Studies, World Christianity, and Liberation Theology). The opportunity of advanced standing adds further variability to the academic program, depending upon the nature and quality of the student's undergraduate academic work. Fourteen courses, over half of the required

total, are available for working out an individualized program of studies leading to specialized preparation in academic depth and to professional ministerial competence.

Required courses may be staffed by one or more professors and are planned to treat subject matter both in scope and depth at the graduate level.

The formulation of the student's course of studies is guided by certain broad but normative recommendations for area distribution of courses and by the advice and counsel of appointed faculty advisers or authorized directors.

Students and advisers are directed to read diligently the paragraphs on elective studies and professional aims and distribution of elective studies in the section on administration of the curriculum.

All academic programs are subject to review and emendation by the dean and the associate dean for academic programs for the fulfillment of the aims of the curriculum. The declared vocational and professional objective of the student is of central importance both to the student and to the faculty adviser in planning the student's comprehensive study program.

Six semesters of residential study are ordinarily required for the completion of the degree. With permission of the associate dean for academic programs, certified nonresidential study, not exceeding the equivalent of eight courses, may be permitted to a candidate for the basic degree.

The normal academic load is four courses per semester. A student with demonstrated competence may, with the consent of the academic adviser and the associate dean for academic programs, enroll for an additional course in the middler and senior years.

**General Features of the Basic Curriculum.** The following is a brief summary of the basic curriculum:

1. Twenty-four courses and six or more semesters of residency are required for graduation.
2. Each student is required to complete two approved assignments in field education (with or without remuneration) under supervision.

Such assignments might include an internship, a summer of full-time work, two semesters of part-time work, or involvement in church or community service. The essential criteria for graduation credits are that the amount and quality of supervision be approved by the Office of Field Education, and that the student be required to evaluate and correlate the experience directly.

3. A normal academic load is four courses with credit.

Admission to candidacy for the Master of Divinity degree is admission to the regular program of studies. The suggested paradigm defines the normal sequence of the student's developing program. Students enrolled for less than three courses are considered part-time and are not eligible for financial aid or student health services.

The curriculum intends to serve graduate-professional aims with maximum flexibility. Fourteen elective courses are available and may be programmed to satisfy vocational and professional preferences. In planning a course of study, the student, in consultation with the adviser, should choose a program that will give a broad understanding and appreciation of future professional responsibilities. Members of the faculty and staff welcome inquiries.

Professional ministries include those of the parish, preaching, teaching, and pastoral care; ministries of education in local churches and higher education; missions; campus ministry; specialized urban and rural ministries; chaplaincies, hospital, institutional, industrial, and military; teaching; religious journalism; audiovisual communications; church agencies; and ecumenical ministries at home and abroad. For many of these, further specialized training will necessarily be sought elsewhere beyond the basic degree. For all of these ministries the student's program of studies can be shaped for the particular ministry in view.



Students are encouraged to elect at least one course in each of the following areas or subdivisions of the curriculum beyond the required courses: American Christianity; history of religion; Christian education; world Christianity and ecumenics; biblical exegesis; pastoral psychology; Christian ethics; worship and preaching; care of the parish (including church and community). Such advanced courses should be selected with a view to the individual's vocational and professional aims and in consultation with the student's faculty adviser. Students are also encouraged to concentrate, usually in not more than five courses in any one subdivision of the curriculum, in an area directly related to their vocational and professional intention. The program of each student is subject to review and revision by action of the faculty adviser, the Committee on Academic Standing, the associate dean for academic programs, or the dean.

**Evaluation/Self-evaluation.** The successful completion of the new M.Div. program rests upon three components: (1) grades; (2) field education; (3) faculty evaluation. Two points of evaluation/self-evaluation occur. One, after the first semester and as an aspect of Church's Ministry 10, provides an early reading on the student's sense of vocation and the appropriateness of the Duke M.Div. program for that person; gives early direction to the student's academic program; provides guidance for the first field assignment.

The second, normally after the fourth semester and as part of Church's Ministry 100, reviews the student's progress to date in classroom and field learning and assesses the student's readiness to complete the Master of Divinity program. Specifically examined are the student's (1) understanding of his/her Christian vocation, (2) self-perception as person in ministry, (3) command of skills of ministry, and (4) ability to integrate practice and theology of ministry.

The instruments to be used for the second include (1) a self-evaluation document; (2) field education data and transcript; (3) a fifteen to twenty-five page typewritten paper on the student's emerging theology of ministry in relation to his/her given faith heritage; (4) an episode of ministry such as a verbatim, a sermon, a case study, a church program, etc., which demonstrates the theology of ministry; and (5) a forty-five minute oral exam over the paper, specific episode, etc.

The evaluation is a graduation requirement which must be satisfied as any other requirement. Students who require significant additional work as judged by the evaluating committee will have to complete that work prior to graduation.

Information from the evaluation is protected by the statutes concerning privacy and confidentiality. It will not be shared by the Divinity School with any extra-university party except upon written release of the student and then only in summary fashion.

**A SUGGESTED M.DIV. CURRICULAR PARADIGM**

**Junior Year**

*Fall Semester*  
Church's Ministry 10  
Church History 13  
Old Testament 11  
Elective  
(Evaluation 1)  
Field Education 1

*Spring Semester*  
Christian Theology 32  
Church History 14  
New Testament 18  
Elective

**Middler Year**

*Fall Semester*  
Christian Ethics 33  
Preaching 30 (or Elective)  
American Christianity 28  
Elective  
Field Education 2, a prerequisite to CM 100

*Spring Semester*  
Elective  
Preaching 30 (or Elective)  
Elective  
Elective

## Senior Year

### Fall Semester

Church's Ministry 100

Elective

Elective

Elective

(Evaluation 2)

### Spring Semester

Elective

Elective

Elective

Elective

### Required Limited Electives:

One course in Black Church Studies (from designated list).

One course from Theologies in Context (from designated list of courses treating Women's Studies, World Christianity, Liberation Theology).

One additional course in scripture.

The third requirement in scripture may be met in one of the following ways:

(1) by the course entitled "The Interpretation of Scripture" (OT/NT 150); (2) by the biblical language sequences OT 115-16 or NT 103-4 (or an advanced language course in which a formal exegetical paper is required); (3) by an English exegesis course in which a formal exegetical paper is required (the courses to be specified in registration materials); (4) by a Greek or Hebrew exegesis course.

**Field Education.** Two units of approved field education are required; they are represented above as winter term placements (thirty weeks); they may also be satisfied in summer placements (ten to twelve weeks).

**Student Pastors and Others with Heavy Outside Employment.** Students in candidacy for the Master of Divinity degree who serve as full-time pastors or work more than fifteen hours per week in addition to their academic schedule are advised that their degree programs will usually require a fourth academic year.

Modification of this schedule requires the approval of the associate dean for academic programs on recommendation of the associate dean for field education.

1. Students with pastoral charges or comparable extracurricular responsibilities ordinarily will enroll for not more than three courses.
2. Students who accept pastoral charges in their middler or senior year are required to have the prior approval of the associate dean for field education. Such students will be required to restrict their course work in accordance with regulation 1 above.
3. Modifications of these regulations will be scrupulously administered. Academic achievement, normally a *B* average, must be demonstrated before any modification of these requirements is allowed. Because adequate indication of the student's academic proficiency is not available before the completion of the first academic year, no modification of regulation 1 is possible for junior students.
4. Students who secure minor employment outside the channels of the Office of Field Education are required to inform the associate dean for field education. Students carrying an outside employment work load of more than fifteen hours per week will be required to limit their academic load.
5. Ordinarily a student may not commute more than fifty miles (one way). Students living farther away than this will be required to stay in Durham during the academic week.
6. Student assistant pastors (not pastors-in-charge) may enroll for a full academic load if they are not on limited program, if their work is under the supervision of the associate dean for field education, and if their field duties involve no more than fifteen hours per week.

**Study Abroad.** Study abroad, with transferable credit toward graduation, may be allowed for a candidate for the Master of Divinity degree by approval of the associate dean

for academic programs. A strong academic record is a prerequisite. Ordinarily, permission for such study may be granted to students who have completed the work of the middler year. Both the institution abroad and a specific course of study proposed must have the prior approval of the associate dean for academic programs. Required courses and the two field education units must usually be completed at Duke.

**Transfer Credits.** Transfer of credit to the Divinity School of Duke University, leading to candidacy for the degree of Master of Divinity, will normally be limited to one-third of the academic credits (in proportional evaluation) required for fulfillment of degree candidacy (see the chapter, "Admissions"). *Theological courses completed more than five years prior to the intended date of enrollment will not be considered for transfer credit.*

**Ordination Requirements.** Students preparing for ordination are strongly advised to ascertain early in their seminary program the precise ordination requirements of their denomination.

United Methodist students must fulfill educational requirements in the *Discipline*, by completing the year-long course on Methodist doctrine, history, and polity (CP 159 and 160). Most annual conferences also require one or more courses in preaching and worship and/or clinical pastoral education.

Students from other denominations should consult with their appropriate church bodies for specific requirements, which may include biblical languages. Polity courses for certain other denominations may be offered from time to time by faculty members or local clergy on prior request.

**Continuation Requirements.** The following are the continuation requirements for students enrolled in the M.Div. degree program:

1. The student must maintain a cumulative grade point average of 2.0. If a student falls below this level he or she may be terminated or warned and placed on limited program. This means that the student may enroll in no more than three courses.
2. At the end of the second semester the student on limited program who does not attain a cumulative GPA of 2.0 is terminated. In exceptional cases a student who shows substantial improvement the second semester but does not quite attain a GPA of 2.0 may be given a third semester to do so.
3. The progress of all students is reviewed at the end of every semester by the Academic Standing Committee.

The M.Div. degree must be completed within six years (twelve semesters). The minimum time in which a degree can be completed is three years (six semesters).

To be classified as full time, a student must be enrolled in three or more courses in a semester.

**M.Div. with a Concentration in Christian Education.** Persons wishing a Master of Divinity degree with a concentration in Christian education will complete the stated requirements of the M.Div. curriculum. In addition, they would ordinarily take CED 80 in the first semester of the junior year; CED 132 in the first semester of the middler year; CED 250, the Senior Symposium in Christian Education, in the second semester of the senior year; and two other Christian education courses. They would also complete one field education unit in a Christian education setting.

**Certificate in Baptist Studies.** Students in the M.Div. and M.C.M. programs interested in a certificate in Baptist Studies should declare that interest, on matriculation, to the director of Baptist Studies and/or the associate dean for academic programs. They will be assigned a Baptist faculty advisor and will be expected to participate actively in Baptist student affairs. They successfully achieve the certificate with at least one field education placement in a Baptist institution, the comple-



tion of three courses in Baptist studies (typically including the year-long sequence in history, polity, and doctrine), participation in the Baptist phase of CM 100 (or CED 250), and a senior evaluation by a Baptist faculty member.

## The Master in Church Ministries Degree

The Divinity School Faculty has sought and the Board of Trustees, the Association of Theological Schools (ATS) and the Southern Association of Colleges and Schools (SACS) have approved a change in degree nomenclature, namely a change from the M.R.E. to a Master in Church Ministries.

**The Program.** The transformed degree, the Master in Church Ministries, permits students to work in specified tracks. Four have been considered as options—Christian education, church music, spirituality, and church administration—and paradigms for the first two are outlined below. The tracks are intended to prepare persons for several of the specialized ministries now exercised in Protestant life and particularly those recognized for diaconal ministry by the United Methodist Church. Each provides opportunities for enquiry and guidance for students who want serious academic study about the church and its ministries and structures for apprenticeship and supervision appropriate for the distinct practices and specializations of ministry. The degree will open initially only with the track of Christian education (1996-97), with implementation of the tracks of spirituality and church music to follow in a year or so (1997-98). The degree is governed by Association of Theological School rubrics for "Programs Primarily Related to Specialized Ministries." (See *ATS Bulletin* 41, part 3, Procedures, Standards, and Criteria for Membership, 52-53, and Draft One of Redeveloped Accrediting Standards, 68-71.) The degree conforms to SACS criteria. All tracks in the program share a common design and set of standard requirements—Church's Ministry 10 and a senior program seminar; core requirements of Church History 13 and 14; Old Testament 11 and New Testament 18; Christian Theology 32 and Christian Ethics 33; additional core requirements in the track; at least one supervised and approved field placement, an apprenticeship in the area of specialization; an evaluation at the end of CM 10 and another, senior evaluation, typically connected with the program seminar and involving theological reflection on practice (a theology of ministry); appropriate admissions standards (in the case of church music perhaps entailing a major or substantial minor in music).

**Admission.** Applications for admission to the Master in Church Ministries program are evaluated by standards and procedures outlined in the Admissions section of this bulletin and are comparable to those employed for the Master of Divinity degree and heretofore for the Master of Religious Education. PLEASE NOTE THAT ADMISSION IS OPEN FOR 1996-97 ONLY TO THE FIRST, THE CHRISTIAN EDUCATION, TRACK.

**I. The Christian education track** within the Master in Church Ministries is designed to prepare persons for ministries as program directors, as directors of religious education, or as diaconal ministers. It has been designed to fulfill the requirements for consecration in diaconal ministry in the United Methodist Church (and anticipates those for the permanent deacon) but will readily serve persons preparing for similar ministries in other denominations. This track requires two full years of course work, sixteen courses, two colloquia, and an approved field education placement.

### *Fall*

Church's Ministry 10  
Church History 13  
Old Testament 11  
Introduction to Christian Education, CED 80

### *Spring*

Christian Theology 32  
Church History 14  
New Testament 18  
Human Development, CED 179  
Colloquium CED 4A

Christian Ethics 33  
Curriculum and Pedagogy, CED 132  
Elective  
Elective or (Christian Worship 78)  
Colloquium CED 4B

Christian Education Seminar 250  
Elective  
Elective  
Elective

The two colloquia, CED 4 A & B, are noncredit but required courses devoted to exploration of vocational issues and special topics. These two colloquia, CM 10 and the Senior Seminar, CED 250, provide each semester a context for relating theory and praxis, the academic program to field experience, the formal curriculum to person and vocation. In the latter, students write a theology of ministry paper. United Methodist students in this track are advised by Gayle Felton, non-United Methodists by Brett Webb-Mitchell and Patricia Page. Students undertake supervised and approved field education placements as Christian educators.

The faculty members most closely associated with the speciality of Christian education are Gayle Felton, Patricia Page, and Brett Webb-Mitchell. In addition, students may elect courses within the graduate education programs of North Carolina State University (Raleigh), the University of North Carolina (Chapel Hill), and North Carolina Central University (Durham).

II. The track in **spirituality** will serve individuals intent upon laying a theological foundation for further work in spirituality, pastoral counseling or pastoral care; persons already involved in lay and/or professional leadership roles intent upon deepening their understanding of such ministry; some who may, under other auspices, seek credentials as spiritual directors; and persons who wish to deepen their own spiritual life. The program features courses oriented towards the spiritual disciplines (SPI 22, CT 119, SPI 210, CW 78) and exploration of spirituality from theological (CT 112, 222, 225 or 249), historical (CH 206 or 250) and biblical (OT 163 or NT 197) perspectives:

*Fall*  
Church's Ministry 10  
Church History 13  
Old Testament 11  
The Spiritual Life, SPI 22

*Spring*  
Christian Theology 32  
Church History 14  
New Testament 18  
Spiritual Direction, SPI 210

Christian Ethics 33  
Christian Worship 78  
Elective  
Elective

Directed Study, SPI 399  
Biblical Prayer, OT 163  
Elective  
Church History 206 or 250

Students in this track lacking college level preparation in psychology and/or counseling may wish to take a basic pastoral care course. They will undertake an integrative paper or project either in the senior seminar, CH 206/250, or in a directed study (SPI 399) with their adviser. They will be expected to participate throughout in a spirituality group (Covenant Discipleship, Order of St. Luke, Friends of Silence and others) or to be under spiritual direction. Field placements would typically be with ministers involved in the Order of St. Luke or in other forms of spirituality and in churches or agencies involved with programs in spiritual disciplines.

Among the faculty to be involved in the spirituality track are Susan Keefe (history), William Turner (theology), James Crenshaw (Bible), Brett Webb-Mitchell (education), Geoffrey Wainwright (theology), Sister Christine Gellings (spiritual direction), Anne Marie Nuechterlein (pastoral care).

III. Implementation of the track in **church music** awaits further conversations with the music department and the chapel musicians.

**United Methodist Requirements.** This degree meets the academic requirements for consecration as a diaconal minister in the United Methodist Church (and anticipates those for the permanent deacon) when United Methodist history, doctrine and polity, CP 159-60, are taken as electives. That sequence, the education requirements and worship, CW 78, are required for certification by United Methodist annual conferences. Such students would substitute the following for second-year electives:

*Fall*

Early Methodism, CP 159  
Christian Worship 78

*Spring*

20th Century Methodism, CP 160

Students seeking consecration and certification under present standards are advised to be in touch with the conference Boards of Diaconal Ministry as early as possible.

**Continuation Requirements.** The following are the continuation requirements for the M.C.M. degree program:

1. The student must maintain a cumulative grade point average of 2.0. A student falling below that may be given a second semester to bring up the cumulative GPA to 2.0. Failure to do so results in termination.
2. The progress of all students is reviewed at the end of every semester by the Academic Standing Committee.

The minimum time in which the M.C.M. can be completed is two years (four semesters). The degree must be completed in four years (eight semesters). To be classified as full time a student must enroll in three or more courses.

## The Master of Theological Studies Degree

This two-year (four semesters) general academic degree, inaugurated in September of 1987, is designed to provide an introduction to the theological disciplines as: (1) foundation for a graduate research degree (Ph.D.); (2) preparation for lay religious careers; (3) grounding for teaching, research or practice in another field (e.g., history, psychology, music); (4) enhancement of institutional leadership roles; (5) personal enrichment.

### Requirements:

1. Sixteen courses and four or more semesters of residency (at least three semesters of which must be at Duke, i.e., transfer credit is limited to one semester);
2. a normal load of four courses per semester;
3. two courses from each of the biblical, historical, and theological divisions, specifically the Old and New Testament introductions; the two semester survey of church history; and the basic theology and ethics courses;
4. the maintenance of a cumulative grade point average of 2.5;
5. a paper\* submitted within a course in the final (fourth) semester and fulfilling, in part, the requirements of that course which addresses itself to the coherence, learnings, or major emphases of the individual's program (choice of course by mutual consent of student, instructor, adviser);
6. completion of all requirements for the degree within a four year (eight semester) period.

**Administration.** In consultation with their advisers, students will draft a set of program goals and project a four semester course plan (or an appropriate alternative

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\*Guidelines for the fourth semester paper will be available.



plan on a part-time basis). At each registration conference, students and advisers will reassess program goals and the course plan adopted by the student. At the end of each semester, the Academic Standing Committee shall review the progress and cumulative grade point average of each student. The M.T.S. program as a whole will be administered by the associate dean for academic programs who will take responsibility for any colloquia or other special M.T.S. programs.

Persons enrolled for three or more courses would be classified as full time.

Students enrolled in the M.T.S. program could avail themselves of graduate level courses of the university open to Divinity School students and cognate to their programs and offerings of the Divinity School except those courses specific to other degrees, e.g. the Church's Ministry 10 and 100 courses of the M.Div. program and the M.R.E. Colloquium.

**United Methodist Requirements.** This degree meets the academic requirements for consecration as a diaconal minister in the United Methodist Church when United Methodist doctrine and polity (CP 159-60) are taken as electives. Students are advised to consult with their Conference Boards of Diaconal Ministry.

### A SUGGESTED M.T.S. CURRICULAR PARADIGM

#### First Year

##### *Fall Semester*

Elective

Old Testament 11

Church History 13

Elective

##### *Spring Semester*

Christian Theology 32

New Testament 18

Church History 14

Elective

#### Second Year

##### *Fall Semester*

Christian Ethics 33

Elective

Elective

Elective

##### *Spring Semester*

Elective\*

Elective

Elective

Elective

## The Master of Theology Degree

The course of study leading to the degree of Master of Theology is designed for graduates of accredited theological schools who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study. Enrollment in the Th.M. degree program is open to a limited number of students who have received the M.Div. (or the equivalent) with superior academic records.

Inquiries on admission may be addressed to the director of admissions for referral to the director of the Th.M. Program.

**General Requirements.** The general requirements for the degree of Master of Theology are:

1. Eight course units of advanced studies, with an average grade of B (3.0 average on a 4.0 scale).
2. Superior performance in a comprehensive examination covering the major area of study. As an alternative to the comprehensive examination the student may elect to do a research project in one major area if approved by the supervising

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\* One of the electives serves as the context for the summary paper.



professor. This project shall carry one course credit, to be counted within the eight units required.

3. Residence for one academic year or the equivalent. (Equivalency to be determined by the associate dean for academic programs).

There are no general language requirements. However, classical or modern languages may be required for certain programs (for example, in biblical studies, Hebrew or Greek may be required).

**The Program of Study.** At least four of the required eight courses must be taken in one of the basic theological disciplines (biblical, historical, theological, or ministerial) that shall be designated as the candidate's major, and at least two courses in another discipline (i.e., an area of study distinct from the major) that shall be designated as the candidate's minor. Ordinarily, no more than two units may be taken through directed reading, and no more than one of these in any one semester.

The comprehensive examination will be given at the close of the course of study for the degree, ordinarily in May or September. Persons electing to do a research project should obtain guidelines for their submission and deposit in the library from the associate dean for academic programs.

The entire program of studies and comprehensive examination or project can be completed within twelve months. In some cases, the time limit may be extended, but in no case beyond three years.

The candidate majoring in pastoral psychology may plan one of three programs or concentrations: a concentration in pastoral theology relating psychology and theological understanding to professional ministry, especially the parish, through course work and supervised clinical or field experience; a concentration in pastoral care through course work and an intern year in basic or advanced clinical pastoral education; a concentration

in pastoral counseling through course work and supervised counseling experience in a pastoral counseling center (if that can be arranged). In the context of clinical pastoral education various professional goals may be sought, including general understanding and skills in pastoral care. The Clinical Pastoral Education Program is certified by the Association for Clinical Pastoral Education. Persons specializing in pastoral counseling and pastoral psychotherapy will be moved toward certification with the American Association of Pastoral Counselors and the American Association of Marriage and Family Therapists. Course PP 181 A (or its equivalent) is considered a prerequisite for a major in pastoral psychology. It is not applicable toward the eight courses required for the degree, although it will be indicated on the student's transcript. Accordingly, the student majoring in this area should ordinarily make provision for a program extending for a full calendar year.

**Financial Aid.** Please note in the pertinent sections of the chapter "Financial Information" that the charges for tuition and general fee for the Th.M. degree are combined and are made on the basis of the number of courses taken, and that in order to be eligible for medical care a student must be taking at least three courses.

**Continuation Requirements.** The following are the continuation requirements for the Th.M. degree program:

1. The student must maintain a cumulative grade point average of 3.0. A student who falls below this level is terminated.
2. The progress of all students is reviewed at the end of every semester by the Academic Standing Committee.

The Th.M. degree must be completed within three years (six semesters). The minimum time in which the degree can be completed is one year (two semesters).

To be classified as full time a student must be enrolled in three or more courses in a semester.

Th.M. students who have registered for the eight required courses and have completed all course work except the comprehensive or the project may maintain registration, obtain use of university resources (library), contract for supervision and sustain their program by registering through a Course Continuation Fee (CCF 101 or 102) in every semester until the program is completed. The fee is \$100 per course (per semester).

## Duke Summer Session

The Divinity School offers a limited summer program, including intensive biblical language courses (Hebrew in 1996 and Greek in 1997), individual directed study, and foundational courses for United Methodist diaconal ministry. Summer courses of graduate level may also be taken in other departments as cognate credits (maximum of two, see provisions under administration of the curriculum). Permission for such credits must be secured in advance from the instructor and from the associate dean for academic programs, and may involve university rather than Divinity tuition.

## Special Programs

Duke Divinity School is a participant in the National Capital Semester for Seminarians conducted by Wesley Theological Seminary in Washington, D.C. Students may, with the approval of the associate dean for academic programs, enroll in this one-semester program focused on political issues and social ethics, and receive up to four transfer credits. Applicants must have completed at least two and not more than four semesters at Duke to be eligible.



## International Study Programs

For several years the Divinity School has been developing programs of international study and exchange involving faculty and students. The main areas in which the development is centered at this time are the following:

**Mexico Seminar.** Brief intensive travel-study to foster appreciation of Mexico, its people, history, culture, and religion with special attention to the faith and mission of the Church in Latin America today. Direct encounter with Third World poverty. About twelve persons per seminar.

**China Seminar.** A travel-study seminar on the re-emergence of the Church in China focusing on the unprecedented response to the Church in a Marxist society. Participants have the opportunity also to learn about China and its people and see first hand the changes taking place in this remarkable country.

**Robert E. Cushman Exchange Fellowship.** Each year faculty and staff nominate a student to represent the Divinity School in the Bonn/Duke Exchange Program. Through the year program at Bonn University (Germany), the student becomes thoroughly acquainted with another culture and different church life. Full participation in nine classes at Bonn required. Language preparation necessary.

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## *Courses of Instruction*



*William C. Turner, Jr., Associate Professor of the Practice of Homiletics.*

## Course Enrollment

The foundational courses typically carry two digit numbers (e.g., New Testament 18, Church History 13, American Christianity 28, Christian Theology 32). Other courses numbered through 199 are elective courses for Divinity School students only. Many courses numbered 200 and above are approved for credit by both the Divinity School and the Graduate School, and require the permission of the instructor. For other prerequisites the student should consult the roster of courses of instruction in this bulletin and should also refer to published registration advice at the time of registration for each semester.

Courses jointly approved by the Divinity School and the Graduate School of Duke University are published in the *Bulletin of Duke University: The Divinity School*. Courses offered in the Department of Religion of Duke University, or as cognate courses in other departments, must be of graduate level (numbered 200 or above) in order to fulfill requirements for degrees in the Divinity School.

## Projected Course Offerings

The following list of proposed course offerings for the 1996-1997 academic year is tentative and subject to change. Detailed listings are available at the time of preregistration in the middle of the preceding semester, and more distant plans may be ascertained by consulting the divisional representative or the instructors concerned.

### Fall Semester, 1996

Old Testament (OT) 11, 101, 115, 209, 223D  
New Testament (NT) 18, 103, 117B, 226E, 303  
Church History (CH) 13, 272, 339  
Historical Theology (HT)  
American Christianity (AC) 28, 270  
History of Religions (HR) 131  
Christian Theology (CT) 124, 133, 200, 272, 332  
Christian Ethics (CHE) 33, 220  
Black Church Studies (BCS) 130  
Church's Ministry (CM) 10, 100  
Care of the Parish (CP) 143, 152, 155B, 155C, 155F, 159  
Christian Education (CED) 80, 132, 255  
Worship and Church Music (CW) 78, 248  
Pastoral Psychology (PP) 64, 77, 181A, 273, 278, 281A  
Preaching (PR) 30, 162, 196  
Spirituality (SPI) 22

### Spring Semester, 1997

Old Testament (OT) 11, 116  
New Testament (NT) 18, 104, 114, 117C, 226C  
Church History (CH) 14, 206, 247A



Historical Theology (HT) 236  
 American Christianity (AC) 293  
 Christian Theology (CT) 32, 333  
 Christian Ethics (CHE) 244, 266  
 Black Church Studies (BCS) 124  
 World Christianity (WC) 263  
 Care of the Parish (CP) 142, 149, 151, 155, 156B, 160, 180  
 Christian Education (CED) 110, 167, 179, 190, 250  
 Worship and Church Music (CW) 78, 268  
 Pastoral Psychology (PP) 64, 75, 180, 181B, 271  
 Preaching (PR) 30, 180  
 Spirituality (SPI) 252  
 Religion and Society (RSO)

## I. Biblical Studies

### OLD TESTAMENT (OT)

**11. Introduction to Old Testament Interpretation.** An introduction to the literature, history, and religion of ancient Israel with emphasis upon exegetical methodology. One course. *Crenshaw*

**101. The Prophetic Movement.** A study of the prophetic movement in Israel from the earliest period to the postexilic development of apocalyptic with special reference to the content and religious teaching of the prophetic writings. One course. *Efird*

**106. Exegesis of the English Old Testament.** Register for course by designated suffix, A-K. One course each. Prerequisite: Old Testament 11 or equivalent. Variable credit. *Crenshaw*

**106A. Genesis.** One course. *Staff*

**106B. Amos and Hosea.** One course. *Crenshaw*

**106D. Wisdom Literature in the Old Testament.** An analysis of selected biblical texts (Proverbs, Job, Ecclesiastes, Sirach, Wisdom of Solomon) and similar ancient Near Eastern literature. One course. *Crenshaw*

**106E. Old Testament Psalms.** Exegesis of various literary types; theological orientation of Old Testament liturgical prayer; implications for prayer and liturgy today. One course. *Crenshaw*

**106I. Isaiah.** One course. *Staff*

**106J. Jeremiah.** A close exegetical study of the English text of Jeremiah and the history of its use and interpretation in Christian and Jewish communities. One course. *Staff*

**106K. Deuteronomy.** One course. *Staff*

**109. The Religion of the Old Testament.** A study of the religious ideas contained in the Old Testament with special reference to their interpretation from Robertson Smith to the present. One course. *Efird*

**115-116. Introduction to Biblical Hebrew.** Elements of phonology, morphology, and syntax. Exercises in reading and writing Hebrew. Exegetical treatment of the book of Jonah. (Two semesters: no credit will be given for 115 without completion of 116.) Two courses. *Staff*

**130. Dying and Death.** Critical consideration of biblical, legal, medical, and ethical perspectives. Prerequisite: New Testament 18, Old Testament 11, or equivalents. One course. *H. Smith and others*

**150. The Interpretation of Scripture.** A study of the methods by which modern interpreters seek to understand ancient texts, and of the problems and options involved in the move from text to sermon. Consideration of texts from both Testaments. Evalu-

ation of the Lectionary as a means of interpretation. Prerequisite: New Testament 18, Old Testament 11. C-L: New Testament 150. One course. *Efird and others*

**163. Biblical Prayer.** An examination of biblical prayer in its ancient context, with attention to the function of prayer in religious traditions and modern theologians' uneasiness over "petition." One course. *Crenshaw*

**170. Women, the Bible, and the Biblical World.** An investigation of selected literary and graphic materials from the ancient world through which the image, role, and status of females can be discerned. C-L: New Testament 170. One course. *Crenshaw or C. Meyers*

**180. From Text to Sermon.** Prerequisite: Preaching 30. See C-L: Preaching 180; also C-L: New Testament 180. One course. *Staff*

**197. The Holy Spirit in Biblical Perspective.** Exegetical and synthetic analyses of conceptions of the Holy Spirit and inspiration in the Hebrew Bible and Septuagint; literary texts of the Second Temple Judaism; Greco-Roman literary texts; and the New Testament. Discussion of the diversity of conceptions will provide a particular focus of the course. Prerequisites: New Testament 18 and Old Testament 11. C-L: New Testament 197. One course. *Levison*

**207. Hebrew Prose Narrative.** Focus on the grammar, syntax, and prose style of classical Hebrew composition; a comparative reading of modern and precritical Jewish and Christian commentary. Readings spanning the spectrum from the early Hebrew prose of Genesis and I and II Samuel to the late compositions of Chronicles and Ezra-Nehemiah. One year of classical Hebrew required. C-L: Religion 207. One course. *Staff*

**208. Classical Hebrew Poetry: An Introduction.** The problem of defining and understanding what is "poetic" in classical Hebrew. Theories of Hebrew poetry from Lowth to Kugel and O'Connor illustrated with readings from Psalms, Isaiah, Job, and Jeremiah. One year of classical Hebrew required. C-L: Religion 208. One course. *Staff*

**209. Old Testament Theology.** A study of important religious themes in ancient Israel such as the presence and absence of God, divine justice and mercy, evil and suffering. Prerequisite: Old Testament 11 or equivalent. One course. *Crenshaw*

**220. Rabbinic Hebrew.** An interpretive study of late Hebrew, with reading from the Mishnah. One course. *Staff*

**223. Exegesis of the Hebrew Old Testament.** Register for course by designated suffix, A-G. One course each. Prerequisite: Old Testament 115-116. Variable credit. *Crenshaw*

**223A. Pentateuch.** Stress on hermeneutical method. One course. *Crenshaw*

**223B. Historical Books.** One course. *Crenshaw*

**223C. Major Prophets.** One course. *Crenshaw*

**223D. Minor Prophets.** One course. *Crenshaw*

**223E. Writings.** One course. *Crenshaw*

**223F. Proverbs.** One course. *Crenshaw*

**223G. Genesis.** One course. *Staff*

**237. History of the Ancient Near East.** Emphasis upon the religions, literature, and art of Mesopotamia. One course. *Staff*

**242. Life after Death in Semitic Thought.** Consideration of the various ideas from the early second millennium through the Intertestamental Period. Exegesis of selected Old Testament passages. Evaluation of recent research. Prerequisite: Old Testament 11 or equivalent; knowledge of Hebrew helpful but not required. One course. *Staff*

**254. Suffering in the Old Testament.** The course examines various responses to suffering in the Old Testament, both human and divine, and attempts to assess these understandings in light of modern conceptions. Focus on Job and Hosea, which discuss human and divine suffering respectively, and on related texts from the Bible and the ancient Near East which illuminate the fundamental problems resulting from divine and human conduct. Prerequisite: Old Testament 11. One course. *Crenshaw*

**302. Studies in the Intertestamental Literature.** Selected documents of the Apocrypha and Pseudepigrapha examined exegetically and theologically in their relation to postexilic Judaism. One course. *Crenshaw*

**304. Aramaic.** A study of the Aramaic portions of the Old Testament and selected passages from the Elephantine and Qumran texts. One course. *Wintermute*

**343. Readings in Ancient Near Eastern Literature.** One course. *Staff*

**347. Hebrew Narrative Art.** Analysis of the literary craft of selected biblical narratives, and critique of various approaches to studying the art of Hebrew narrative. Prerequisites: knowledge of Hebrew and consent of instructor. One course. *Crenshaw*

**350, 351. Seminar in Old Testament.** Research and discussion on selected problems in the Old Testament and related fields. One course each. *Staff*

**353. Seminar on Text Criticism.** Emphasis upon transmission, versions, apparatus, and method. Prerequisites: New Testament 103-104 and Old Testament 115-116 or equivalents. One course. *Staff*

**373-374. Elementary Akkadian.** Study of the elements of Akkadian grammar. Reading of neo-Assyrian texts shedding light on the Old Testament. (Two semesters: not credited separately.) Prerequisite: biblical Hebrew. Two courses. *Staff*

**375-376. Elementary Ugaritic.** Study of the elements of Ugaritic. (Two semesters: not credited separately.) Prerequisite: biblical Hebrew. Two courses. *Staff*

## NEW TESTAMENT (NT)

**18. Introduction to New Testament Interpretation.** An introduction to the literature of the New Testament with special attention to the perspectives and methods of historical-critical investigation and interpretation. One course. *Efird, Hays, or M. Smith*

**103-104. Hellenistic Greek.** Designed for beginners to enable them to read the Greek New Testament. (Two semesters: no credit will be given for 103 without completion of 104; however, students with at least one full year of college Greek may be permitted to enroll in 104.) Two courses. *Efird*

**105. Studies in Paul.** An investigation of Paul's apostolate based upon the Acts and the Epistles with attention to Paul's theology as reflected in selected passages. One course. *Efird*

**114. Jesus in the Gospels.** A consideration of the origins, transmissions, and literary fixation of the Jesus traditions with special attention to the message of the Kingdom, the problem of messianic self-consciousness, and the passions. One course. *M. Smith*

**116. Exegesis of the English New Testament I.** Register for course by designated suffix, A-E. One course each. Variable credit. *Staff*



- 116A. Luke-Acts. One course.
- 116B. Galatians. One course.
- 116C. Selected Later Epistles. One course.
- 116D. I and II Corinthians. One course.
- 116E. Matthew. One course.

117. **Exegesis of the English New Testament II.** Register for course by designated suffix, A-D. One course each. Variable credit. *Staff*

- 117A. The Gospel and Epistles of John. One course.
- 117B. Romans. One course.
- 117C. Revelation. One course.
- 117D. Mark. One course.

118. **The New Testament in Greek.** Readings in the Gospels. One course. *Staff*

119. **The New Testament in Greek.** Readings in the Epistles. One course. *Staff*

150. **The Interpretation of Scripture.** A study of the methods by which modern interpreters seek to understand ancient texts, and of the problems and options involved in the move from text to sermon. Consideration of texts from both Testaments. Evaluation of the Lectionary as a means of interpretation. Prerequisite: New Testament 18, Old Testament 11. C-L: Old Testament 150. One course. *Efird and others*

170. **Women, the Bible, and the Biblical World.** An investigation of selected literary and graphic materials from the ancient world through which the image, role, and status of females can be discerned. C-L: Old Testament 170. One course. *Crenshaw or C. Meyers*

180. **From Text to Sermon.** Prerequisite: Preaching 30. See C-L: Preaching 180; also C-L: Old Testament 180. One course. *Staff*

197. **The Holy Spirit in Biblical Perspective.** Prerequisites: New Testament 18 and Old Testament 11. See C-L: Old Testament 197. One course. *Levison*

210. **Church and Ministry in the New Testament.** A consideration of the development of the concept and office of ministry in the Early Church as it is reflected in the New Testament. One course. *M. Smith*

222. **John Among the Gospels.** One course. *Staff*

225. **Living Issues in New Testament Theology.** Critical examination of major problems and issues in New Testament interpretation and theology. Prerequisite: New Testament 18 or equivalent. One course. *Hays or M. Smith*

226. **Exegesis of the Greek New Testament I.** Register for course by designated suffix, A-E. One course each. Prerequisite: New Testament 103-104. Variable credit. *M. Smith*

- 226A. Matthew. One course.
- 226B. Romans. One course.
- 226C. Mark. One course.
- 226E. The Gospel and Epistles of John. One course.
- 226F. I and II Corinthians. One course.

227. **Exegesis of the Greek New Testament II.** Register for course by designated suffix, A-E. One course each. Prerequisite: New Testament 103-104. Variable credit. *M. Smith*

**227A. Luke.** One course.

**227B. Galatians.** One course.

**227C. The Pastoral Epistles.** One course.

**227D. Epistles of Peter and James.** One course.

**227E. Acts.** One course.

**257. New Testament Ethics.** An examination of several approaches to the scope and issues of New Testament ethics, including such topics as symbolic language in ethical discourse, the place of the law, conscience, community, sexuality, and property. One course. *Hays*

**303. The Old Testament in the New: New Testament Writers as Interpreters of Scripture.** This doctoral seminar will seek to examine the ways in which New Testament authors read and interpreted Scripture. Special attention will be given to Paul, the Gospels, and Hebrews. Prerequisite: New Testament 18, 103-104, or equivalents. One course. *Hays*

**309. Hermeneutics.** Consideration of the nature of understanding and of several interpretive methods including phenomenological, existential, historical, literary, and structural. Their application to New Testament texts, primarily the parables of Jesus. One course. *Staff*

**311. Pharisaic Judaism in the First Century.** A reading course in first-century Pharisaic Judaism. One course. *Staff*

**312. Pauline Theology.** Studies in some aspects of Paulinism in the light of recent scholarship. One course. *Staff*

**314. Judaism and Christianity in the New Testament.** A study of their interaction with special attention to Paul. One course. *Staff*

**319. The Gospel According to St. Matthew in Recent Research.** One course. *Staff*

**321. The Theology of Paul: Structure and Coherence.** Review of recent critical discussion of Pauline theology, with particular emphasis on the problem of the structure and coherence of Paul's thought. Reading knowledge of German, as well as some previous work in Greek exegesis of the Pauline corpus is required. Consent of instructor required. One course. *Hays*

**340, 341. Seminar in the New Testament.** Research and discussion on a selected problem in the biblical field. One course each. *M. Smith*

**345. The Epistle to the Hebrews in Recent Research.** One course. *Staff*

## II. Historical Studies

### CHURCH HISTORY (CH)

**13. Early and Medieval Christianity.** A survey of the history of Christianity from its beginnings through the fifteenth century. One course. *Keefe and Steinmetz*

**14. Modern European Christianity.** A survey of the history of Christianity from the Reformation to the present. One course. *Heitzenrater and Steinmetz*

**126. The English Reformation.** The religious history of England from the accession of Henry VIII to the death of Elizabeth I. Extensive readings in the English reformers from Tyndale to Hooker. One course. *Steinmetz*

**183. Renewal Movements in Church History.** An investigation of renewal movements as parallel phenomena throughout Christian history utilizing social scientific

studies of culture change and focusing on ancient monasticism, Franciscanism, Anabaptism, and early Methodism as representative renewal movements. One course. *Staff*

**206. The Christian Mystical Tradition in the Medieval Centuries.** Reading and discussion of the writings of medieval Christian mystics (in translation). Each year will offer a special focus, such as: Women at Prayer; Fourteenth-Century Mystics; Spanish Mystics. Less well-known writers (Hadewijch, Birgitta of Sweden, Catherine of Genoa) as well as giants (Eckhart, Ruusbroec, Tauler, Suso, Teresa of Avila, Julian of Norwich, Catherine of Siena, and Bernard of Clairvaux) will be included. One course. *Keefe*

**235. The English Church in the Eighteenth Century.** Studies of Christianity in England from the Act of Toleration, 1689, to the death of John Wesley, 1791. One course. *Staff*

**247A, 247B. Readings in Latin Theological Literature.** Critical translation and study of important theological texts in Latin from various periods of the history of the Church. Prerequisite: reading knowledge of Latin (introductory course offered in the classics). One course each. *Keefe*

**250. Women in the Medieval Church.** The history of the Medieval Church told from its women figures. Attention to the life and writings of saints, heretics, abbesses, queens, mystics, recluses, virgins, bishops' wives, and reformers. Topic varies. One course. *Keefe*

**260. Life and Times of the Wesleys.** A seminar on John and Charles Wesley and their colleagues in relation to English culture and religion in the eighteenth century. Consent of instructor required. One course. *Heitzenrater*

**272. The Early Medieval Church.** One course. *Keefe*

**272A. The Early Medieval Church, Out of Africa: Christianity in North Africa before Islam.** In this seminar we will look at selected writings of Tertullian, Cyprian, and Augustine, as well as lesser known African Fathers. We will look at the African rite of Baptism, African Creeds, and African Church councils. Focusing on major theological, liturgical, and pastoral problems in the African church, we hope to gain an appreciation of the crucial role of the African church in the development of the church in the West. One course. *Keefe*

**276. The Sacraments in the Patristic and Early Medieval Period.** A study of the celebration and interpretation of baptism or eucharist in the church orders and texts of the early church writers. One course. *Keefe*

**339. The Radical Reformation.** Protestant movements of dissent in the sixteenth century. Special attention will be devoted to Muntzer, Carlstadt, Hubmaier, Schwenckfeld, Denck, Marpeck, Socinus, and Menno Simons. One course. *Steinmetz*

**344. Zwingli and the Origins of Reformed Theology.** Source studies in the early Reformed tradition. One course. *Steinmetz*

## **HISTORICAL THEOLOGY (HT)**

**123. Readings in Historical Theology.** Prerequisites: Church History 13 and 14. One course. *Staff*

**183. Teachings of the Christian Churches.** An historical examination of Eastern Orthodox, Roman Catholic, Protestant, and evangelical doctrinal statements. One course. *Staff*

**201. Christian Thought in the Middle Ages.** A survey of the history of Christian theology from St. Augustine to the young Martin Luther. One course. *Steinmetz*



**204. Origen.** The systematic and apologetic writings of an important Alexandrian thinker and exegete of the third century. One course. *Staff*

**219. Augustine.** The religion of the Bishop of Hippo in the setting of late antiquity. One course. *Clark*

**236. Luther and the Reformation in Germany.** The theology of Martin Luther in the context of competing visions of reform. One course. *Steinmetz*

**241. Problems in Reformation Theology.** Consent of instructor required. One course. *Steinmetz*

**246. Problems in Historical Theology.** Consent of instructor required. One course. *Staff*

**271. Christologies of the Early Church.** Investigation of important soteriologies and debates centering upon the person of Christ from the second through the fifth centuries. One course. *Staff*

**273. Continental and British Roots of Evangelicalism.** A study of seventeenth- and eighteenth-century movements in Europe and Britain characterized by a stress on personal religious experience. One course. *Staff*

**302. Theology of John Wesley.** One course. *Staff*

**308. Greek Patristic Texts.** Critical translation and study of selected Greek texts illustrative of significant aspects of patristic theology and history from the second through the fifth century A.D. One course. *Staff*

**313. The Apostolic Fathers.** A study of the religious thought in the writings of the Apostolic Fathers. One course. *Staff*

**317. Seminar in the Greek Apologists.** A study of the apologetic writings of the Greek Fathers in relation to the challenges of their contemporary world. Special attention will be given to leading protagonists of late Graeco-Roman culture, such as Celsus, Porphyry, and Julian. One course. *Staff*

**318. Seminar in the Greek Fathers.** A study of selected topics from the Greek Fathers. One course. *Staff*

**334. Theology and Reform in the Later Middle Ages.** Examination of selected issues in the life and thought of the medieval church from the twelfth century through the fifteenth century. Readings in popular and academic theologians from Pierre Abelard to Gabriel Biel. One course. *Steinmetz*

**337. Theology of St. Thomas Aquinas.** Intensive reading in the *Summa Theologica* and biblical commentaries. One course. *Steinmetz*

**338. Calvin and the Reformed Tradition.** The theological development of John Calvin. A comprehensive examination of his mature position with constant reference to the theology of the other reformers. One course. *Steinmetz*

#### AMERICAN CHRISTIANITY (AC)

**28. A History of Religion in the United States.** A consideration of the nature of Christianity in America and the history of its development. One course. *Richey and Wacker*

**203. Studies in American Methodism.** Research seminar devoted to selected topics in the Wesleyan and Methodist traditions in America. One course. *Richey*

**267. American Religious Thought.** Exploration of major writings from the Puritans to the present. 'Religious thought' will be broadly construed to include formal theologi-

cal treatises, spiritual autobiographies, folk theology, serious religious journalism, and the like. One course. *Richey and Wacker*

**270. American Evangelicalism and Fundamentalism.** A reading seminar covering major themes in the development of transdenominational evangelicalism and fundamentalism in America from the eighteenth century to the present. One course. *Wacker*

**293. Religious Issues in American History.** A reading seminar devoted to selected topics, problems and issues in American religion. One course. *Richey or Wacker*

**294. Christianity and American Society.** Consideration of civil religion, church and state, the Protestant establishment and secularization in their historical development and contemporary expressions in America. One course. *Richey*

**295. Religions in the American South.** A study of the interrelationships of southern religion and southern culture. One course. *Richey or Wacker*

**342. American Religious Biography.** A study of the leading biographers of American religious figures and of the qualities of a successful biography. One course. *Staff*

**349. History and Historiography of Religion in North America.** An opportunity for advanced students in North American religious studies to deepen their understanding of some of the major questions in the field. Examination of how religious history is actually written—with special attention to the imaginative and moral motivations that enter into that process. Consent of instructor required. One course. *Wacker*

**397. Readings in North American Religious History.** Directed research on selected topics in the history of religion in the United States and Canada. One course. *Wacker*

## HISTORY OF RELIGIONS (HR)

**5. Middle East Travel Seminar.** A three-week, noncredit study venture visiting Syria, Jordan, Egypt, Israel, and Greece. Scheduled typically for mid-May to mid-June, it involves teams from Union (Richmond), Southern (Louisville), and Emmanuel (Tennessee). Up to five Duke students will be selected. Persons accomplished in biblical studies, with interest in archaeology and in the Middle East, with strong grades and outstanding promise for ministry and denominational leadership make the best candidates. No credit. *Crenshaw*

**131. Introduction to Judaism: Calendar as Catechism.** An integrated view of Judaism through a survey of the holy days of the Jewish calendar. The holy days are the focal points of well integrated and constantly elaborated teachings, rituals, liturgies, and folkways—all uniquely attached to a timely (historical) moment (e.g., Passover), or to a timeless gesture (e.g., Day of Atonement). Each event is a prism through which the light of Jewish civilization is refracted to reveal its various aspects and eras. One course. *Sager*

**131A. Introduction to Judaism: Investigations into the Jewish Life Cycle: A Time to be Born and a Time to Die.** This course will give particular attention to the liturgical and ritual responses to life and death. The studies of rite and liturgy will lead to investigations of the underlying Jewish theological and philosophical claims, as well as the psychological attitudes that inform rejoicing and grieving. One course. *Sager*

**135. Introduction to Midrash: The Rabbinic Art of Interpreting Scripture.** How does the single voice of Scripture contain the chorus of rabbinic interpretations? What is the nature of the dialogue between text and interpreter? What is the authority of exegesis? These are some of the questions that we will explore through selected midrash texts. The texts themselves will represent a variety of literary forms, styles, and topics. One course. *Sager*

**180. Introduction to Asian Religions.** Preliminary consideration of problems and methods in the study of religious traditions, followed by a survey of the historical development, beliefs, practices, and contemporary significance of the Islamic religion and the religions of India, China, and Japan. See other courses offered in the Department of Religion. One course. *Staff (Department of Religion)*

### III. Theological Studies

#### CHRISTIAN THEOLOGY (CT)

**32. Christian Theology.** The course aims at furthering the active appropriation of the Christian faith in the context of the contemporary church and in engagement with the world of today. It treats principally the themes of the classic creeds or the traditional topics of dogmatics. It also introduces students to the epistemological issues of revelation, faith, authority, interpretation, and social location. One course. *Staff*

**102. Science and Biblical Theism.** Implications of scientific knowledge in relation to biblical understandings of creation, revelation, and providence. One course. *Staff*

**105. A Theological Introduction to Roman Catholicism.** An exploration of fundamental themes of Roman Catholic history, theology, liturgy, and spirituality, with special attention to the mass. One course. *Berger*

**108. Major Types of Protestant Theology.** A survey of Protestant theology from the reformers to Karl Barth. (For juniors only.) One course. *Langford*

**110. This Life and the Age to Come.** Christian eschatology and the meaning of history in the light of God's triumph over sin, suffering, and death. One course. *Staff*

**112. The Doctrine of the Holy Spirit.** An examination of pneumatology under systematic categories which include: creation, Old Testament, prophecy, the life and ministry of Christ, the Church, salvation, the canon, the sacraments, and eschatology. One course. *Turner*

**118. Theological Controversies from Schleiermacher to Barth.** Examination of major figures and theological issues of nineteenth-century Protestant theology. Attention to the relation of faith and culture, the role of experience in theological reflection, religion as illusion, the Jesus of history and the Christ of faith. One course. *Fulkerson*

**119. Prayer and Contemplation.** One course. *Staff*

**120. Reformed Theologies.** This course is designed to acquaint the student with the theological ethos of the Reformed tradition, in both its early Continental and its contemporary expressions. One course. *Fulkerson*

**124. Issues in the Wesleyan Theological Tradition.** A study of selected historical and constructive themes. Specification of topics will be made at each time of offering. One course. *Langford*

**133. Thinking Theologically.** An introduction to the nature and task of theology as part of the life of the Church. One course. *Berger*

**134. Theology of Pentecostalism.** An exploration of this tradition with examination of its distinctive emphases and interpretations of Christian faith. One course. *Turner*

**139. Women, Theology, and the Church.** An introductory course about gender and the church that considers issues of authority in the mainline churches and theological traditions, surveys the range of feminist theologies from biblical and evangelical to radical, and allows the student to work on practical issues of gender and ministry. One course. *Fulkerson*



**140. Theology and Interpreting Scripture.** Why do people differ in their interpretations of Scripture? Is there a right meaning for biblical texts? Or, do we need to look at the theological convictions of different communities to understand differences in interpretation? This course will explore different interpretative practices, historical and contemporary. We will ask about the theological convictions that shape readings in investigations of a variety of materials, ranging from those that depend upon historical critical method, to "political" or liberationist interpretations, to "Spirit-led" interpretations. One course. *Fulkerson*

**149. Images of the Church.** Selected theologies of the nature of the Church from the reformation to present. One course. *Fulkerson*

**200. The Person and Work of Christ.** The problem of knowledge of Christ and formulation of a doctrine of His work and person in the light of biblical eschatology. One course. *Jennings*

**210. Contemporary British Theology.** Selected problems in representative British theological writings after 1900. One course. *Langford*

**211. Authority in Theology.** The idea and function of authority in theology. One course. *Fulkerson or Langford*

**214. Feminist Theology.** Examination of feminist theologians and religionists, their critical perspective on the Christian tradition and constructive proposals out of the resources of "female experience." One course. *Fulkerson*

**215. The Nature and Mission of the Church.** Christian understanding of the Church—biblical, historical, contemporary—with a view toward ecumenical doctrinal construction. One course. *Staff*

**216. Kierkegaard Studies.** Critical examination of selected works. One course. *Staff*

**217. Church and Sacraments.** The basic teachings on Church and sacraments, biblical, historical, contemporary. One course. *Staff*

**218. The Sacraments: Rites and Theologies.** Contemporary study of the sacraments brings together ritual studies, liturgical history, the history of dogma, and systematic reflection. This course examines the baptismal and eucharistic rites of the Church, both past and present, along with theological rationales of and commentaries on them offered by ecclesiastic writers of the patristic, medieval, Reformation, and modern periods. Prerequisites: Christian Theology 32, Church History 14, Worship and Church Music 78, or consent of instructor. C-L: Worship and Church Music 218. One course. *Tucker and Wainwright*

**220. Theological Topics.** A seminar on contemporary theological issues, content to be designated by the Theological Division. One course. *Staff*

**225. The Christian Understanding of Human Nature and Destiny.** Representative historical and recent theological interpretations of human nature, predicament, deliverance, and possibility. Prerequisite: Christian Theology 32 or consent of instructor. One course. *Staff*

**229. Tragedy and Christian Faith.** An analytical and constructive philosophical interpretation of the fundamental tragic dimension of human life in the light of a Christian theological understanding. One course. *Staff*

**249. The Lord's Prayer.** By studying historic and contemporary expositions of the Lord's Prayer, the course provides an introduction not only to the doctrines of God, humanity, prayer, and the kingdom, but also to the variety of the Christian spiritual tradition in time and space. One course. *Wainwright*

**253. Feminist Theory in Christianity.** This course examines nineteenth- and twentieth-century feminist theories and their implications for Christian doctrine and Biblical interpretation. One course. *Clark and Fulkerson*

**255. Christians in Religious Dialogue.** An examination, from within Christian theology, of the principles of dialogue; of various contemporary dialogues with Jews, Muslims, Hindus, and Buddhists; and of traditional and emergent theologies of religion. One course. *Wainwright*

**256. John Wesley in Controversial and Ecumenical Theology.** A study of John Wesley and his theology both in his engagements with other confessional traditions, and in his views on such matters as church, ministry, sacraments, and authority. Consideration will also be given to these topics in relation to contemporary theology, especially "Faith and Order." One course. *Wainwright*

**259. Icon Theology.** A study of theological controversies surrounding the use of images in Christian worship, followed by an attempt to perceive the symbolic conventions and doctrinal content of some Eastern, Western, and contemporary icons. One course. *Wainwright*

**265. Contemporary Pneumatologies.** An exploration of the doctrine of the Holy Spirit in relation to modern trends in theology with special emphasis on those cases where there is an accompanying social movement. One course. *Turner*

**272. Theology of Paul Tillich.** An examination of Tillich's philosophical theology. One course. *Staff*

**279. Understandings of the Resurrection in Contemporary Theology.** A study of recent literature on the resurrection of Jesus Christ from the angles of exegesis, historical criticism, hermeneutics, and systematic significance. One course. *Wainwright*

**298. Christians in Religious Dialogue.** One course. *Wainwright*

**299. Theology and Contemporary Secular Understandings of Human Nature.** Critical theological examination of selected current interpretations of human nature and the human situation. One course. *Langford*

**300. Systematic Theology.** Method and structure of systematic theology, the doctrine of God, theological anthropology, and Christology. Prerequisite: Christian Theology 32 or equivalent. One course. *Langford*

**320. Theology, Power, and Justice.** Critical examination of a major theme of modern thought in Schleiermacher, Hegel, Marx, and Tillich. One course. *Staff*

**322. Nineteenth-Century European Theology.** Protestant theology from Kant to Herrmann. One course. *Staff*

**325. Philosophical Theology I.** Selected readings from Plato and Aristotle which helped to shape philosophical theology from Origen through Augustine and Aquinas. One course. *Staff*

**326. Philosophical Theology II.** Main problems of philosophical theology in the modern period. One course. *Staff*

**327. Philosophical Method in Religious Studies.** One course. *Staff*

**328. Twentieth-Century European Theology.** Critical examination of the thought of selected Protestant theologians from 1900 to 1950. Prerequisite: Christian Theology 32. One course. *Staff*

**329. Readings in Theology and Language.** Sample treatments of religious language in linguistic analysis, hermeneutical theory, literary criticism, liturgical practice, and fundamental theology. One course. *Wainwright*

**330. Contemporary Christologies.** A seminar dealing with contemporary Roman Catholic and Protestant Christology. Readings and discussion will focus on theological proposals from major contemporary figures. One course. *Wainwright*

**331. Eschatology.** A study of issues in individual, communal, and universal eschatology against the background of twentieth-century scholarly work in the kingdom of God. One course. *Wainwright*

**332. System in Theology.** An examination of the various factors that go into the shaping of a systematic theology, followed by a study of several recent and contemporary examples of the genre. One course. *Wainwright*

**333. Systematic Theology: The Doctrine of the Trinity.** Biblical bases, patristic developments, contemporary statements and connections. One course. *Wainwright*

**352. Seminar in Christian Theology.** Research and discussion of a selected problem in the systematic field. One course. *Staff*

### CHRISTIAN ETHICS (CHE)

**33. Christian Ethics.** The course tackles theological and conceptual issues to do with the ways in which Christian moral discourse is generated in the life of the Church, in order that students may gain a sense of basic methodological alternatives in Christian traditions. It introduces students to such matters as the Church's relationship to the world, casuistry of various kinds, character formation, a moral psychology necessary for the development of Christian virtue, the place and function of scripture, and how Christians understand social responsibility. One course. *Hauerwas and H. Smith*

**107. The Biblical Bases of Christian Ethics.** Examination of major themes and moral teachings, principally in the Decalogue, the Gospels, and the Epistles, with application to some contemporary issues. Prerequisite: New Testament 18, Old Testament 11, or equivalent. One course. *H. Smith*

**112. Technology and Christian Ethics.** The impact of the technological revolution upon American culture, and a normative Christian response. One course. *Staff*

**113. Contemporary Issues in Christian Morals.** Constructive examination of selected areas of public and private morality. One course. *Staff*

**130. Dying and Death.** Critical consideration of biblical, legal, medical, and ethical perspectives. Prerequisite: New Testament 18, Old Testament 11, or equivalents. One course. *H. Smith and others*

**136. Perspectives on Food and Hunger.** An interdisciplinary symposium on national and world hunger and malnutrition, including (whenever possible) student involvement in local hunger-related agencies. One course. *Staff*

**194. The Protestant Church and American Culture.** Analysis from the perspective of Christian ethics of current problems in the interpretation of church and culture with explicit reference to the parish setting. One course. *H. Smith*

**205. War in the Christian Tradition.** An analysis of how Christians have understood and evaluated war. Particular attention to the question of whether war should not be regarded as a positive moral good. Works by Augustine, Aquinas, Bainton, Ramsey, Childress, Niebuhr, and Johnson will be considered. One course. *Hauerwas*



**212. Feminist Christian Ethics.** Through the lens of major feminist works in Christian ethics, this course examines gender-related ethical problems the church faces today. One course. *Rudy*

**213. Christian Ethics in America.** One course. *Hauerwas*

**215. Seminar in Theological Ethics.** Seminar that concentrates on readings in Aristotle, Aquinas, Kant, and Barth. One course. *Hauerwas*

**220. Ethical Topics.** A seminar on contemporary ethical issues, the specific content in any given semester to be designated by the Theological Division. One course. *Staff*

**228. Theological Dimensions of the Law.** A legal system inevitably overlaps with systems of belief and value, usually but not always termed religious, which claim to provide an ultimate valid construction of reality and a finally determinative set of values. This course will examine Western religious and theological reflections on the nature and legitimacy of law and politics and on the appropriate relationships between law and religion. One course. *Powell*

**229. Goodness and Personhood.** Concepts of "the good" are inextricably linked to understandings of personhood. A seminar exploring texts both ancient and recent that address such issues as the relationship between the finitude of human life and its meaningfulness, the metaphors of the "inner" life and "centeredness," the differences and affinities between reason and desire, and the significance of the notions of presence and transcendence. One course. *Powell*

**230. Moral and Value Education.** A critical, theological investigation of Durkheim, Dewey, Simon, Kohlberg, Bull, Rokeach, and implications for education in church and society. Prerequisites: Christian Education 105 and Christian Ethics 33. One course. *H. Smith*

**234. Ethical Issues for the Government Lawyer (Seminar).** See C-L: Law 536. One course. *Staff*

**242. Human Sexuality.** Examination of biological, biblical, cultural, and other aspects of human sexuality, together with analytical and constructive interpretation. Consent of instructor required. One course. *H. Smith*

**244. Interdisciplinary Seminar in Medical-Legal-Ethical Issues.** A seminar composed of students and faculty from the Medical, Law, and Divinity Schools for critical consideration of selected pertinent issues of mutual professional interest. Consent of instructor required. One course. *H. Smith and others*

**245. Ethics in World Religions.** Moral foundations, assumptions, and applications in such historic faiths as Hinduism, Buddhism, Confucianism, and Islam, in the light of Christian ethical perspectives. One course. *Staff*

**262. Marxist Ideology and Christian Faith.** Comparative examination of Communist and Christian doctrines such as man, society, sin, history and eschatology, together with an introduction to the contemporary dialogue. One course. *Staff*

**266. Ethics and Health Care.** Critical examination of philosophical and theological bases of medical practice, and analysis of selected aspects of biomedical technologies, with particular attention to informing ethical assumptions. One course. *H. Smith*

**268. Revelation and Authority in the Church.** A critical and constructive examination of contemporary concepts, exploring such questions as: Is the Church's memory autonomous or constituted and directed by what it remembers? How does ecclesiology shape epistemology, and vice-versa? Does the word of the Church also become the

mission of the Church? Is the word of God constitutive of human community? One course. *H. Smith*

**290. Current Problems in Christian Social Ethics.** A critical study of secularization, the technological revolution, and the ecological crisis. One course. *Staff*

**291. Historical Forms of Protestant Ethics.** A survey of major types of Protestant ethical theory from Luther through contemporary figures. One course. *Staff*

**292. Happiness, the Life of Virtue, and Friendship.** An investigation of the interrelation of these themes in selected authors. An examination of whether the loss of the interrelation of these themes accounts for some of the problems of modern philosophical and theological ethics. One course. *Hauerwas*

**296. Community, Faith, and Violence.** This seminar explores attempts to formulate fundamentally theological modes of social and political criticism with the focus on the role of faith and violence in secular society. Readings include works by theologians, social critics, and political theorists. One course. *Powell*

**348. Seminar in Theological Ethics.** Philosophical paradigms and the nature of the Christian life. Consent of instructor required. One course. *Hauerwas*

**383. Moral Theology in the Twentieth Century.** Critical and comparative examination of ethical theory as exhibited in the work of selected contemporary theologians. One course. *H. Smith*

**387. Ethical Method.** Selected methodological issues in contemporary theological ethics. One course. *H. Smith*

**389. Christian Ethics and Contemporary Culture.** A study of the interaction between Christian thought and current secular social theory. One course. *Staff*

### **BLACK CHURCH STUDIES (BCS)**

**100. Introduction to Black Theology.** An examination of the historical roots of black theology with special attention to the treatments of traditional themes and problems in theology by black theologians and their rationale for the black theological enterprise. One course. *Jennings or Turner*

**124. The Black Church in America.** A consideration of the historical and theological development of the separate black Christian denominations in America with attention to some of the major leaders, black worship, and black preaching. One course. *Jennings or Turner*

**126. Black Religion and Social Conflicts in America.** An examination of some of the reactions of black religious groups to the limits placed upon black people in American life, efforts made to break down racial barriers in society, and attempts to institutionalize black responses to such barriers. One course. *Turner*

**128. The Life and Thought of Martin Luther King, Jr.** An examination of the life of Martin Luther King, Jr., as a minister and leader of the civil rights movement. One course. *Staff*

**130. Contemporary Black Culture and Consciousness.** A theological investigation of prevailing cultural, political, social, economic motifs in black cultural life and their relation to theology and the life of the church. Prerequisite: Black Church Studies 124, Christian Theology 32, or consent of instructor. One course. *Jennings*

**144. Selected Topics in Black Church History.** An exploration of pivotal events, key issues, and persons in the development of the black church in America. Prerequisite: Black Church Studies 124 or consent of instructor. One course. *Staff*

**168. Leadership in the African-American Churches for the Twenty-First Century.** This course provides an opportunity for students with special interest in the history and role of the African-American churches to examine their resources and contributions in the light of current challenges, and to assess their potential influence in the twenty-first century. One course. *Staff*

#### **WORLD CHRISTIANITY AND ECUMENICS (WC)**

**124. The Christian World Mission.** A study of theological foundations, guiding principles, and contemporary problems of the world Christian community. One course. *Staff*

**129. Ecumenical Visions of the Church in the Twentieth Century.** A study of some of the major theologies of the Church in our century, as they emerged together with the growth of the ecumenical movement. The course will focus on how specific ecclesiologies treat the question of the unity of the Church(es) in the light of ecumenical hopes, proposals for unity and practical endeavors. One course. *Berger*

**133. The Expansion of Christianity.** A survey of the spread of Christianity and the growth of the worldwide Church with special emphasis on nineteenth- and twentieth-century Protestantism in the non-Western world. One course. *Staff*

**135. Contemporary Issues in the World Church.** Analysis of political, social, cultural, and religious conditions in a selected area of the world, and of theological-ethical insights and perspectives within the indigenous Christian community. One course. *Staff*

**156. The Ecumenical Movement.** Its contemporary development, structures, activities, and problems, against the background of Church unity and disunity. One course. *Staff*

**224. Baptism, Eucharist, Ministry: Themes for an Ecumenical Theology.** An introduction to the history and current reception of the document, "Baptism, Eucharist, and Ministry," of the World Council of Churches as it came out of a Faith and Order meeting in Lima, Peru, in 1982. One course. *Berger*

**263. Third World Theology.** The course is designed to give students a broad introduction to the life of the church in Latin America. It will focus on three areas: the historical development, the current theological reflection (concentrating on liberation theology), and the life and witness of the Church today. One course. *Berger*

**386. Christianity in Dialogue with Other Faiths.** Contemporary currents of Christian thought as they relate to resurgent non-Christian religions and involve new formulations of a theology of mission. One course. *Staff*

### **IV. Ministerial Studies**

#### **THE CHURCH'S MINISTRY (CM)**

**10.** A general and integrated introduction to critical reflection on the history, theology, and practice of ordained ministry in Christian communities. Required of entering Master of Divinity students. One course. *Staff*

**100.** A sequel course, accenting the practice of ministry, to be taken after a Master of Divinity student has completed fifteen courses. One course. *Staff*



## THE CARE OF THE PARISH (CP)

**50. Church and Community.** The structure and dynamic factors shaping the present-day community together with their import for the work of the Church. One course. *Staff*

**128. Ministerial Leadership and Participative Skills.** A study of the pastor's role as participant-facilitator with attention to organizational theory and facilitative skills employing the group workshop method of learning. One course. *Staff*

**129. The Pastor as Consultant to Church Organizations.** A consideration of the pastor's role as organizational consultant with special emphasis on data gathering, diagnosis, and intervention using experiential learning designs. One course. *Staff*

**130. Planning and Directing the Church's Program.** Principles of planning, organizing, staffing, directing, and evaluating the program of the local church. One course. *Staff*

**142. Women and Ministry.** Theological and practical issues related to women and ministry. One course. *Pope-Levison*

**143. Understanding Congregations.** This course explores congregations from theological and social scientific perspectives, considers various frameworks for understanding congregations, and helps students develop methods and techniques for engaging in congregational study. It will include a field study of a congregation. One course. *Carroll*

**147. The Pastoral Responsibility for Administration.** A consideration of the major responsibilities of the pastor in the administration of the local church. One course. *Lawrence*

**148. Christian Stewardship and Church Finance.** A comprehensive look at stewardship from a Christian perspective, it will address the question of how to care for the life of creation in a world increasingly threatened by extinction. No more urgent task confronts the church today. The course will also focus on stewardship education, financial planning, and management in the local church. It grows out of a June 1990 colloquy sponsored by the Commission on Stewardship, National Council of Churches. One course. *Staff*

**149. The Ministry to the Campus.** An exploration of theological, historical, pastoral, and "practical" dimensions of the church's ministry in higher education and to campus ministry as a mission of the church. One course. *Ferree-Clark*

**151. The Town and Country Church.** The small church, the circuit church, circuit administration, larger parish and group ministry, and the town and country movement. One course. *Mann*

**152. Introduction to Evangelism.** A study of the nature, purposes, and methods of contemporary Christian evangelism with special attention to the local church. One course. *Pope-Levison*

**154. The Urban Church.** The function, nature, program, and administration of the effective city church and of the urban minister's distinctive task. One course. *Staff*

**155, 156. Denominational Studies.** Register for course by designated suffix, B-U. One course each. *Staff*

- 155B, 156B. The Baptist Churches.** One course each. *Hewitt*  
**155C, 156C. The United Church of Christ.** One course each.  
**155D, 156D. The Presbyterian Churches.** One course each.  
**155E, 156E. The Christian Church (Disciples of Christ).** One course each.  
**155F, 156F. The Anglican Tradition.** One course each. *Graebner, Mullin, and Wall*  
**155U, 156U. Unitarian Studies.** One course each.

**159. Early Methodism: History, Theology, and Polity.** A study of the character and development of Methodism, beginning with John Wesley and tracing important features of this tradition through the nineteenth century. One course. *D. Campbell, Felton, and Heitzenrater*

**160. Twentieth-Century Methodism: History, Theology, and Polity.** The development of the United Methodist Church, focusing on theological diversity and patterns of organizational life, with major concentration on the polity of this church as provided by the current Discipline. One course. *D. Campbell, Felton, and Lawrence*

**161. The Canterbury Course.** An international summer graduate course on Anglican identity and spirituality, foundational theological issues in Anglicanism, and the Communion's ecumenical promise. Held at Canterbury Cathedral, the course features the life, history, and personalities of Canterbury and its centuries of spiritual hospitality. The dates are July 9-30. Arrangements are handled by the Canterbury Cathedral Trust in America (202) 328-8788 or (800) 932-2282. The course is open to Divinity students, persons matriculated at other ATS accredited seminaries and holders of the M.Div. Tuition, board, and fees are \$2,250. Travel to and in England extra. One course. *H. Smith and Canterbury Chapter*

**162. The Oxford Course.** The Oxford Course at Westminster College, Oxford, sponsored by the Divinity School, is undertaken by Tim Macquiban, other faculty of Westminster, and other British experts on Methodism. Featuring lectures, seminars, visits to Methodist sites in and around Oxford, worship and participation in the community life of the college, the course explores British Methodism in its social context. Applications will be available through Russell Richey at Duke or Tim Macquiban, Wesley and Methodist Studies Centre, Westminster College, Oxford OX2 9AT, England. One course. *Staff*

**177. Diversity, Liberation, and Christian Community.** In view of prevailing tensions, ethnic and cultural alienation, and social fragmentation, and the growing pressures for justice and equality throughout the society, this course will be concerned with strategies and possibilities to promote community in light of the Christian gospel. The focus will be on the ministry of the local parish as well as corporate and diocesan church bodies. One course. *Proctor*

**180. Theological Foundations of Evangelism.** One course. *Pope-Levison*

**189. The Multiple Staff Ministry.** Group work, leadership, and organizational theories as applied to staff ministries in large church and cooperative parish settings. One course. *Staff*

**200. Church Research Seminar.** Methods of research and survey for the gathering, analysis, and interpretation of church and community data, together with preparation and use of denominational statistics. One course. *Staff*

**220. Seminar in Contemporary Ministries.** A seminar in patterns and issues of contemporary ministries, content to be designated by the Ministerial Division. One course. *Staff*

## CHRISTIAN EDUCATION (CED)

**25. Education as a Pastoral Ministry.** An introduction to Christian formation, education, and instruction within the life of a worshipping community. One course. *Staff*

**80. Introduction to the Education of Christians.** This course is guided by two questions: as Christians how do we know God? and what does it mean for Christians to be known by God? These questions will be addressed utilizing the following theoretical bases in Christian religious education: 1. human developmental theories; 2. the liberal progressive perspective; 3. liberation praxis theory; 4. communitarian approaches; 5. postmodern educational theories. One course. *Webb-Mitchell*

**101. Curriculum and Pedagogy in the Church.** This course will center on these two questions: First, who decides what theory of Christian religious education is used in the Church? Central to this question is the theory of curriculum that dictates what and why Christian religious education is going on in the Church. The second question concerns which teaching paradigm is going to be used in the Church? This question focuses on pedagogical theory, otherwise known as the how, when, and where of Christian religious education. Not only will students discover whose curriculum goals and which pedagogical approach should be used in the Church, the course will also broaden the students' concept of teaching and learning in the context of local congregations and parishes. One course. *Webb-Mitchell*

**102. Christian Education and the Small Membership Church.** An overview of the educational ministry of churches with small memberships including goal setting, program-format, leadership development, selection of curriculum resources, organization-design, and evaluation methodology. One course. *Staff*

**109. Ministries with Youth.** Study of adolescence with special attention to strategies, models, and resources for working with junior and senior high school youth. One course. *Staff*

**110. The Changing Family in the Changing Church.** An introductory course to the educational ministry of the Church with adults and families. Guidance and resources toward the development of comprehensive programming. Attention will be given to adult ages and stages and family life cycles. Prerequisite: Christian Education 80. One course. *Webb-Mitchell*

**112. Educational Ministries with Children and Youth.** An introductory course to the educational ministry of the Church with children and youth. It will consider foundations, religious development theories, goal-setting, teaching-learning, curricula, and leadership education. One course. *Staff*

**132. Curriculum and the Church School.** An introduction to the administration and leadership of the church school with special attention to curriculum, curriculum resources, and teachers training. One course. *Staff*

**153. Education and Social Issues.** An exploration of contemporary social issues and their relationship to education and to the Church. One course. *Staff*

**167. Strengthening Laity in Ministry.** In this course students will examine the Biblical and theological foundations of the ministry; identify images of the ministry from the Bible, the church's history, and the Christian community today; and practice methods of interviewing and listening to lay people in order to develop models of Christian religious education which can strengthen laity in ministry and encourage creation of structures which challenge and support laity in ministry. One course. *Page*



**175. Liturgy and Education.** Preparing persons for baptism, renewal, confirmation, eucharist, marriage, and death; and training lay persons for the liturgical, pastoral, and social ministries. One course. *Staff*

**179. Human Development.** The goal of this course is to teach students the primary theories of human development and its role and function in the field of Christian religious education and its implications in the life of the church. The material covered in this course will focus on the historical, philosophical, theological, and sociological roots of human developmental theories, cover the primary theories of human development in use today, explore new paradigms in human developmental theories, and discover the presence of these theories in the life of congregations and parishes. One course. *Webb-Mitchell*

**185. The Arts and the Church.** An exploration of the intuitive way of knowing and the place of the imagination in Christian faith and life with special attention to the use of the arts in the church, especially in Christian education, and in worship. One course. *Staff*

**190. The Church's Teaching Office.** An applied course in models, strategies, and methods of teaching adults with a focus on Scripture so as to equip ministers for their teaching office. The course is designed primarily to prepare students to communicate to their congregations the essential truths of the Bible and the Christian faith. One course. *Felton*

**220. Colloquium in Religious Education.** One course. *Staff*

**221. Christian Formation.** An exploration of theological and anthropological insights into the social processes by which Christian faith, character, and consciousness are nurtured. Special attention to spiritual and moral formation. One course. *Staff*

**250. Church's Teaching Ministry.** Required of students in the M.R.E. program and for others concentrating in Christian education in the M.C.M. or M.Div. programs. The symposium functions as both a capstone course in the theory and practice of educational leadership in the church and as an evaluation of professional knowledge and competence. One course. *Felton*

**254. Religion in American Literature.** A study of selected works of American literature with significant theological motifs. Emphasis will be upon the utilization of literary materials to enhance preaching and teaching in the church. One course. *Felton*

**255. History and Christian Nurture.** Critical examination of selected historical issues in Christian nurture. One course. *Felton*

**269. Theology and Christian Nurture.** Critical examination of selected theological issues in Christian nurture. One course. *Staff*

#### **PASTORAL PSYCHOLOGY (PP)**

**64. Pastoral Counseling in a Parish Setting.** The local church as the setting for pastoral counseling. Lectures, group supervision, and student verbatim materials will be utilized. Prerequisite: currently placed in a field setting or consent of instructor. One course. *Dunlap, Glover-Wetherington, or Meador*

**75. The Minister in Crisis Situations.** Focus on the dynamics of providing pastoral care to persons in crisis. Crisis theory and methods of intervention will be explored. Emphasis will be placed on specific critical human situations and pastoral response. One course. *Staff*

**77. Pastoral Care in the General Hospital Setting.** An examination through intensive individual and group supervision, of the student's pastoral ministry to the ill, the

dying, and the bereaved in the general hospital setting. (Highly advised for those not planning to take CPE, Pastoral Psychology 181, 182, or 183. One course. *Travis*)

**171. Pastoral Counseling.** Consideration of the structures and processes of pastoral counseling; pastoral evaluation, referral, intake contract, goals, transference, termination, and other special problems. Consent of instructor required. One course. *Staff*

**172. Premarital Counseling.** Pastoral care in marriage and family life with special emphasis on premarital guidance within the context of the local church's program of family life education. One course. *Staff*

**173. Psychotherapy and Sanctification.** An analysis of structuring and growth processes in psychotherapy in the light of a Christian understanding of sanctification. One course. *Meador*

**174. Theology and Personality Processes.** Theological and psychological understandings of basic human experiences; explorations of the dynamics and values of religious practices, developmental concerns, self awareness. One course. *Staff*

**175. Special Practicum Projects.** For advanced students who want additional clinical experience under supervision in a pastoral care setting (inner-city; alcoholic rehabilitation; counseling; etc.). One course. *Staff*

**176. Pastoral Care and Persons in Institutions.** Register for course by designated suffix, B-D. One course. *Staff*

**176B.** Lectures by staff and ward visits at the Murdoch Center for the Mentally Retarded and the facilities in the Butner, North Carolina, complex (state hospital, alcoholic rehabilitation, training school). One course. *Staff*

**176C.** Lectures by staff and ward visits at the Central Prison in Raleigh and related correctional facilities. One course. *Staff*

**176D.** The Church's ministry to the elderly and homebound explored through lectures, case conferences, and visits to the elderly and homebound parishioners of local Durham churches. One course. *Staff*

**178. Pastoral Limits and Pastoral Authority.** A course designed to develop an understanding of the nature of pastoral authority, its relationship to various forms of power, and the form and nature of pastoral leadership. It will explore pastoral boundaries, ethical constraints, and the limits of time, skill, and energy. One course. *Dunlap*

**179. Alcoholism: A Disease of the Body, Mind, and Spirit.** Exploration of the church's ministry with alcoholics and their families. Special emphasis upon the disease concept, Alcoholics Anonymous, impact upon families, the role of intervention and referral, and strategies for church involvement and action. Attention to women's issues and minority perspectives. One course. *Staff*

**180. Pastoral Care and Women.** Lecture-discussions by staff and visiting professionals to aid in developing skill in the pastoral care of women. Issues addressed: moral development, sexual dynamics, dual career families, child and spouse abuse, women in leadership positions. One course. *Glover-Wetherington*

**181A, 181B. Basic Clinical Pastoral Education, Extended.** Semester long units of CPE in the fall semester and spring semesters. The program is accredited by ACPE and is conducted at Duke Hospital. The maximum credit is two course credits. Two courses offer the option of parish or hospital settings for pastoral work. Resources from both settings are utilized in classes. Special emphasis on group process and ministry skills. Openness to self and others is expected. Variable credit. *Travis and staff*

**182A, 182B, 182C. Basic Clinical Pastoral Education.** Units of Basic CPE offered in the summer, fall, and spring in programs accredited by ACPE. (Two course units each, maximum credit.) Variable credit. *Staff*

**183A, 183B, 183C. Basic Clinical Pastoral Education.** Units of clinical pastoral education offered in the summer, fall, and spring in programs functioning under the Standards of the College of Pastoral Supervision and Psychotherapy (at present, credit is only conferred for work done at the Marriage and Family Counseling and Consultation Center, Durham). (Two course units each, maximum credit.) Variable credit. *Staff*

**191. Anger and Conflict in the Church.** A course designed to increase students' ability to do faithful pastoral care in situations involving anger and conflict. Goals include evaluating a variety of approaches to anger theologically and psychologically; becoming aware of attitudes and practices that betray anger; developing skills to focus discussions on real issues; learning to choose the most gentle confrontation that will be effective; and exploring models of managing church conflict. One course. *Glover-Wetherington*

**200. Theology and Spirituality of Aging.** An introduction to aging and a theology and spirituality of aging. A brief overview of the demographics and the social/psychological/physical aspects of aging will be given. The primary focus will be on the theological and spiritual dimensions of aging, studying biblical references to aging, and the theological and spiritual growth that occurs throughout the lifespan. In addition, some time will be spent studying counseling strategies for coping with loss, bereavement, and grief; the older adult's role within the church; and the church's responsibility toward the older adult. One course. *Suggs*

**220. Seminar in Pastoral Theology.** One course. *Staff*

**234. Depression: Pastoral and Theological Issues.** A class to foster pastoral insight into experiences of depression, to understand bio-psycho-social models thereof, to develop skills in pastoral caregiving with depressed people and to explore theological responses to the phenomenon. Prerequisite: Pastoral Psychology 64 or equivalent. One course. *Dunlap*

**263. Communal and Systemic Approaches to Pastoral Care.** Prerequisite: Pastoral Psychology 64. One course. *Glover-Wetherington*

**270. Health Crises in the Family Developmental Cycle: Pastoral Responses.** With the assumption that the family life cycle provides a primary setting for the ministry of the community pastor, this course will focus on appropriate pastoral responses to specific health crises which significantly impact families. These crises range from infertility and childbirth difficulties to diseases of dementia and senility among the elderly. Attention will be given to developing a theoretical understanding of the family life cycle, an informed appreciation of these health crises, and a theologically based approach to pastoral care in this context. One course. *Travis*

**271. Marriage and Family.** The psychodynamics of marital conflict and family problems; principles and procedures in marriage and family counseling. (For seniors and Master of Theology candidates.) One course. *Nuechterlein*

**273. Seminar in Pastoral Theology: Theological Dimensions of Pastoral Counseling.** Research and discussion of issues of developmental psychology and spiritual growth. One course. *Staff*

**275. Individual Study in Pastoral Psychology.** Selected readings in major issues in pastoral psychology issuing in a research or honors paper. One course. *Staff*



**278. Psychological Theories of Personality.** A systematic presentation of leading personality theories, with reference to developmental processes (motivation, cognition, learning, etc.) and their implications for Christian ministry. One course. *Meador*

**281A, 281B, 281C. Advanced Clinical Pastoral Education in Pastoral Care and Counseling.** Pastoral care with inpatients and pastoral counseling of individuals, couples, families, and groups in a pastoral counseling center. (Two course units each.) Th.M. students may pursue advanced standing in the hospital-based CPE program through the established policy and procedures for that status. The conditions for advanced CPE resemble those of the basic—thirty hours per week; limit six; pass/fail option. Prerequisite: interview. Two courses each. *Staff*

## **PREACHING (PR)**

**30. Introduction to Christian Preaching.** The development of a theology of preaching and methods of sermon construction, including preaching in class, critique, private conference, and local church evaluation. Prerequisite: New Testament 18 or Old Testament 11 or consent of instructor. One course. *Lischer or Turner*

**161. Preaching and the Church Year.** Preaching the lectionary texts in the context of the Church's worship and calendar. The appropriate cycle of the lectionary will be followed. In-class preaching and evaluation. Prerequisite: Preaching 30. One course. *Lischer*

**162. The Rhetoric of Preaching.** Preaching and the art of language. A survey of rhetorical theories, forms, and techniques in service to the Gospel. In-class exercises, preaching, and evaluation. Prerequisite: Preaching 30. One course. *Lischer or Willimon*

**164. Proclaiming the Parables.** Approaches to the interpretation and proclamation of the parables of Jesus. Readings in nonbiblical narrative and parable. In-class storytelling and preaching. Prerequisite: Preaching 30. One course. *Lischer*

**165. Preaching as Public Address.** A workshop on preaching and worship leadership organized around the principles of speech and effective communications. Extensive use of audio-visual recordings and private conferences. Prerequisite: Preaching 30. One course. *Staff*

**180. From Text to Sermon.** Preaching from Biblical sources. Emphases upon the goal and methodology of exegesis, the hermeneutic problem, and verbal communication in the present. Prerequisite: Preaching 30. C-L: New Testament 180 and Old Testament 180. One course. *Staff*

**182. Preaching Practicum.** An advanced laboratory course for extra competence in the preparation, delivery, and evaluation of sermons. Prerequisite: Preaching 30. One course. *Lischer*

**183. Preaching in the Black Community.** A study of the style and content of black preaching with attention to the unique roles of black preachers in society. An analysis of the essential characteristic of preaching in the black church. Prerequisite: Preaching 30. One course. *Turner*

**184. Preaching in the Wesleyan Theological Tradition.** A study of selected major themes in Wesleyan theology and their interpretation in contemporary preaching. Prerequisite: Preaching 30. One course. *Staff*

**186. Twentieth-Century Preaching.** A study of contemporary preaching based on printed, recorded, audio- and video-taped sermons of leading homiletics of our age. Prerequisite: Preaching 30. One course. *Staff*

**189. Preaching in Context.** Prerequisite: Preaching 30. One course. *Turner*

**195. Preaching about Social Crises.** The sermon will be studied as a means of educating parishioners on social crises, and the understanding of the Gospel in calling for discipleship in social, as well as personal, Christian witnessing. One course. *Staff*

**196. Preaching in the Parish.** A consideration of preaching in relationship to pastoral duties and the total task of ministry with attention to week-by-week preaching in the parish setting. Some attention will be given to funerals and crisis situations. Prerequisite: Preaching 30. One course. *Lawrence or Turner*

**202. Scripture and Ecclesiology in Homiletical Methods.** An examination of the place and function of revelation, particularly as it relates to theories about scripture and ecclesiology, in a variety of homiletical methods. A representative group of homiletical texts and sermons will be analyzed with a view toward each student constructing his or her own methodological statement and writing a sermon. Prerequisites: Christian Theology 32 and Preaching 30. One course. *Hoch*

**280. History of Preaching.** A study of theological trends and significant personalities in homiletics in various periods from the Apostolic Age to the present. Prerequisite: Preaching 30. One course. *Staff*

**281. Advanced Sermon Analysis Seminar.** A critical study, on the basis of selected sermons and student presentations, of principal and practical problems facing the contemporary preacher. Prerequisite: Preaching 30. One course. *Lischer*

**282. Women and the Word.** An examination of theological, social, historical, and communication issues pertaining to women and preaching. Sermons, video-tapes and other resources will be used in analyzing the styles and content of preaching by women representing various traditions and historical periods. Prerequisite: Preaching 30. One course. *Staff*

**283. Theories of Preaching.** Significant theories of preaching from Augustine to the present. Seminar presentations and in-class preaching and valuation. Prerequisite: Preaching 30 or consent of instructor. One course. *Lischer*

## **WORSHIP AND CHURCH MUSIC (CW)**

**2. Music Skills for the Parish.** A noncredit course designed to develop fundamental skills for reading musical notation and rhythmic patterns, using examples from the *United Methodist Hymnal*. Sightsinging and single-note keyboard playing not a prerequisite but will be encouraged throughout the course. Not intended for persons with prior knowledge of music skills. No credit. *Arcus*

**78. Introduction to Christian Worship.** An introduction to the history, theology, and practice of Christian worship from an ecumenical perspective. Surveys major aspects of worship, including: the Lord's Day, the Christian calendar, Word and sacraments, daily and occasional services, liturgical music, and liturgical space and arts. Lecture, small group discussions, and practicum. Prerequisite: Church History 13 or 14. One course. *Tucker*

**141. The Church Year.** An examination of the historical, theological, and pastoral dimensions of the Christian calendar and lectionary. Prerequisites: Worship and Church Music 78. One course. *Tucker*

**153. The Leadership of Worship.** An advanced practicum for developing worship leadership skills appropriate for pastoral ministry. Prerequisites: Worship and Church Music 78. One course. *Tucker*

**158. Ways of Worship.** Prerequisite: Christian Worship 78 or consent of instructor. One course. *Berger*

**162. Hymnody.** A survey of hymns, various hymn types and styles, and issues in hymnody designed for persons in or preparing for Christian ministry. Includes an introduction to the fundamentals of hymnology. One course. *Arcus*

**167. Baptism and the Lord's Supper.** A study of these sacraments with attention given to major representative traditions and to current liturgical formulations and practice. Prerequisites: Worship and Church Music 78. One course. *Tucker*

**180A. Church Music for Nonmusicians.** A three-fold study including (1) an examination of historic and contemporary theologies of church music; (2) a survey of the musical forms used in worship by the Church; and (3) basic musicianship and song leading with an emphasis upon the selection and use of hymns and service music contained in denominational hymnals. One course. *Tucker*

**180B. Church Music for Musicians.** An in-depth two-fold study for students with prior musical knowledge, namely: (1) musicianship skills including song leading, basic conducting and literature, including select masterworks for the church and hymns; (2) pastor and musician teamwork, with emphasis on case studies of specific pastor-musician teams. Readings and projects will acquaint students with issues of church music and encourage a continuing development of skills, research, and resource building. One course. *Arcus*

**203. Directed Reading in Church Music.** An advanced course offering students the opportunity to explore an area of church music of special interest to them, culminating in a major paper and/or public presentation. Includes compilation of bibliography for the study of church music. Enrollment limit: ten. Consent of instructor required. One course. *Arcus*

**208. Hymns of Charles Wesley.** One course. *Berger*

**218. The Sacraments: Rites and Theologies.** Prerequisites: Christian Theology 32, Church History 14, Worship and Church Music 78, or consent of instructor. See C-L: Christian Theology 218. One course. *Tucker and Wainwright*

**220. Selected Topics.** One course. *Staff*

**223. Baptism, Confirmation, and Renewal.** Biblical, historical, and theological perspectives on sacrament of Christian initiation. Issues related to the catechumenate, baptism, confirmation, and rites of renewal will be examined. Prerequisites: Worship and Church Music 78. One course. *Tucker*

**248. Pastoral Offices: Christian Rituals for the Life Cycle.** Prerequisites: Worship and Church Music 78 or consent of instructor. One course. *Tucker*

**250. Advanced Seminar in Liturgical Studies.** Reading and research in a selected area of liturgical study to be announced. One course. *Staff*

**251. Studies in Spirituality.** A consideration of different dimensions of the spiritual life. C-L: Spirituality 251. One course. *Staff*

**252. Theologies of Church Music: From the Early Church to the Present.** The Church, throughout its history, has sought to clarify its relationship to culture. In particular, is the Church to accommodate its worship to culture or avoid adopting of cultural forms? The relationship of culture and worship will be explored from the angle of the historical Church's use of music. How have the Church's theologians defined the role of music in the Church? What are the most appropriate musical forms for use in the Church? These issues will be examined with an eye to discussing and evaluating contemporary Christian musical expressions. One course. *Tucker*



**268. Worship in the Anglican and Wesleyan Traditions.** A study of the historical, theological, liturgical, and sociological influences which have shaped the worship patterns of the Episcopal Church and the major American denominations that claim a Wesleyan heritage. Historical and contemporary liturgies will be examined, and concerns related to the leadership of contemporary liturgies will be discussed. Prerequisites: Care of the Parish 159 and 160, Worship and Church Music 78. One course. *Tucker*

## **SPIRITUALITY (SPI)**

**22. The Spiritual Life.** An introduction to spirituality, spiritual formation, and the development of a personal spiritual discipline. One course. *Nuechterlein*

**210. Spiritual Direction.** This course is an introduction to the process of spiritual direction; its theological foundations, its nature, its preparation, and its practice. Prerequisite: Spirituality 22 or consent of instructor. One course. *Gellings*

**231. Prayer.** A theological and psychological exploration of Christian prayer understood as our human communication with the Triune God. One course. *Staff*

**233. Pastoral Spirituality.** An introduction to spiritual direction, the spirituality of healing and reconciliation, and spiritual formation. Prerequisites: Spirituality 22 and consent of instructor. One course. *Staff*

**240. Spiritual Direction Practicum.** The process and skills of spiritual direction will be the focus of this course. Students will have the opportunity to develop and practice the skills with one another and will also be required to see two persons in direction during the course. Prerequisite: Spirituality 210. One course. *Gellings*

**251. Studies in Spirituality.** See C-L: Worship and Church Music 251. One course. *Staff*

**252. Discernment Spirituality.** One course. *Staff*

See the respective division listings for the following course descriptions.

**OT 163. Biblical Prayer.** *Crenshaw*

**CT 112. The Doctrine of the Holy Spirit.** *Turner*

**CT 119. Prayer and Contemplation.** *Staff*

**CT 249. The Lord's Prayer.** *Wainwright*

## **RELIGION AND SOCIETY (RSO)**

**121. Religious Life in Sociological Perspective.** An examination of religion and religious life as social phenomena, aiming to provide perspectives and conceptual tools for understanding the ways in which various aspects of religious life are embedded in and related to society and social processes. The theoretical perspectives will then be brought to bear on current issues. Students will participate in one or more group field experiences. One course. *Carroll*

**157. The Church and Social Change.** A sociological study of the relationship of the Church to the process of social change, including the role of the Church as innovator, the Church as participant in social movements, method(s) of accomplishing change, and the religious leader as an agent of social change. One course. *Staff*

**158. Contemporary Religious Movements.** The nature, ideology, development, clientele, and role of contemporary religious movements; the process by which such movements develop into established organizations; and their relationship to the mainline churches. One course. *Staff*

**166. AMERC.** A six-week summer course offered in and around Berea, Kentucky, through the ATS-accredited consortia, Appalachian Ministries Educational Resource Center

(AMERC). The program offers participants training in small town and rural ministry and in relating Christian theology and ministry to the people, cultures, and political economies of Appalachia. It features field trips for direct experiences of Appalachian life, a faculty of experts on the region and its religion, use of the eighty-acre AMERC farm campus, and access to the Berea College special Appalachian collection. One course. *Staff*

**254. Contemporary American Religion.** One course. *Carroll*

## V. Clinical Training and Internships

### CLINICAL TRAINING IN PASTORAL PSYCHOLOGY

Students may earn up to two course credits for a quarter or unit of clinical pastoral education in programs accredited by the Association for Clinical Pastoral Education (ACPE).

Students involved in clinical training under the direct supervision of members of the pastoral psychology staff during the academic year should register for credit under PP 182 for two course units unless a course credit has already been received for PP 77, in which case only one rather than two credits will be granted for the CPE quarter. Students should apply for such training through the director of clinical pastoral education.

Students involved in clinical training in summer CPE quarters should register with ACPE and the associate dean for academic programs as soon as accepted for training by a chaplain supervisor. Upon receipt of a supervisor's report at the end of the training period the student will receive two course units of transfer credit.

### INTERNSHIPS (INT)

**125-126. Special Ministry Internship.** When a student needs to develop professional competencies in a highly specialized form of ministry, the associate dean for field education will assist in designing an appropriate learning contract and in negotiating for a suitable placement setting, provided the arrangements meet the basic criteria approved by the Field Education Committee. Variable credit.

**131-132. Ministry through Social Agency Internship.** A twelve-month placement in a regular personnel position in a social service agency to meet the job description of the agency and to develop a personal mode and style of ministry in a secular setting through understanding, appreciation, involvement in, and critical theological reflection upon environment, structures, values, and decision-making processes as conveyed by the conduct of the agency. Variable credit.

**137-138. Parish Ministry Internship.** A twelve-month placement, individually designed to engage the student in specified learnings in a wide variety of ministry functions in a local parish, under qualified supervision and using the guidelines of a learning contract. Variable credit.

**143-144. Campus Ministry Internship.** A nine- to twelve-month placement in approved locations designed to provide special learnings in delivering a ministry to college students under qualified guidance and utilizing a learning contract which specifies seminars, a personal journal, directed reading, and consultations to develop competency in these functions. Variable credit.

**175-176. Clinical Pastoral Education Internship.** A twelve-month placement in a clinical program accredited by the Association of Clinical Pastoral Education (ACPE). Variable credit.

**197-198. Mission Internship.** A special internship to prepare for service in church missions may be arranged by enlisting in the national or overseas program of the United Methodist Board of Global Ministries for one to three years. As a requirement for agency planning, applications should be initiated in the fall of the middler year. Other denomi-

national and/or work-study experiences abroad may be given field education credit by special arrangement with the Associate Dean for Field Education. Variable credit.

## VI. Colloquia/Interfield/Field Education

The following courses carry no credit and, with the exception of CCF 101 and 102, carry no fee.

### COLLOQUIA/INTERFIELD/FIELD EDUCATION (CIF)

**2A, 2B. Writing Program for Divinity Students.** The writing course in reader expectation theory, a noncredit course, provides students with tools and techniques to strengthen analytic and writing skills using papers assigned in other courses. Students practice the skills and techniques presented in lectures and have opportunity to discuss questions about research and writing. No credit. *Jarratt*

**3A, 3B. Choir.** A noncredit course for those participating in choir and desiring that involvement to show on the transcript. No credit. *Wynkoop*

**4A, 4B. Christian Religious Education Seminar.** A colloquium of faculty, students, and religious educators that meets bi-weekly in exploration of the vocation of religious education and in examination of current and future needs of the profession. Strongly advised for M.R.E. students and M.Div. students concentrating in Christian education. Meets every other Tuesday from 4:45 to 5:45. No credit. *Felton and Webb-Mitchell*

### COURSE CONTINUATION FEE (CCF)

**101, 102. Course Continuation Fee.** \$200. A mode of registration required in instances in which students have registered for but not completed all the courses or requirements for their program. A registration status for Th.M. students and others maintaining matriculation while finishing a thesis or other incomplete work. No credit.

### FIELD EDUCATION (FE)

**1,2. Field Education Seminar.** Students in the M.R.E./M.C.M. must satisfy one such placement, either 1A (summer) or 1B-1C (academic year). Students in the M.Div. must satisfy two such placements, 1A or 1B-1C and 2A or 2B-2C: the former follows CM 10; the latter precedes or coincides with CM 100. Register for course by designated suffix, A-F. No credit. *Hoch, Ritchie, et al*

**1A, 2A. Approved Summer Placement.** No credit. *Staff*

**1B, 2B. Approved Academic Year Placement.** No credit. *Staff*

**1C, 2C. Approved Field Education Placement.** No credit. *Staff*

**2D, 2E, 2F. Field Education Seminar.** No credit. *Staff*

**4C. Student Pastor Formation Groups.** Student pastor mentoring groups. Student pastors in years 1 to 3 are required to take these pastoral formation, noncredit, seminars. No credit. *Ritchie*

## Program in Religion Graduate Courses

The following courses are offered periodically in the Graduate Program in Religion by the Department of Religion faculty and may be taken by Divinity students with permission of the instructor.

201. Studies in Intertestamental Literature

202. Language and Literature of Dead Sea Scrolls

216. Syriac

217. Islam in India

218. Religions of East Asia



- 219. Augustine
- 220. Rabbinic Hebrew
- 221. Reading in Hebrew Biblical Commentaries
- 224A. Comparative Semitic I
- 224B. Comparative Semitic II
- 228. Twentieth-Century Continental Theology
- 231S. Seminar in Religion and Contemporary Thought
- 232S. Religion and Literary Studies
- 233. Modern Narrative and Religious Meanings
- 234. Early Christian Asceticism
- 235. Heresy: Theological and Social Dimensions of Early Christian Dissent
- 239. Introduction to Middle Egyptian I
- 240. Introduction to Middle Egyptian II
- 243. Archaeology of Palestine in Biblical Times
- 244. Archaeology of Palestine in Hellenistic-Roman Times
- 248. Theology of Karl Barth
- 258. Coptic
- 261. Islam in the African-American Experience
- 264. The Sociology of the Black Church
- 275S. Topics in Early Christian and Byzantine Art
- 277. Judaism in the Greco-Roman World
- 280. The History of the History of Religions
- 284. The Religion and History of Islam
- 301. Seminar in Contemporary Christian Ethics
- 304. Aramaic
- 304A. Targumic Aramaic
- 305. The Septuagint
- 310. Readings in Judaica
- 311. Pharisaic Judaism in the First Century
- 324. Readings in the History of Religion
- 336. Worlds and Texts
- 360. Special Problems in Religion and Culture
- 380. Existentialist Thought

# Appendices

## I. GUIDELINES FOR INCLUSIVE LANGUAGE

### Duke Divinity School

The decadence of our language is probably curable. Those who deny this would argue, if they produced an argument at all, that language merely reflects existing social conditions, and that we cannot influence its development by any direct tinkering with words and constructions. So far as the general tone or spirit of language goes, this may be true, but it is not true in detail. Silly words and expressions have often disappeared, not through any evolutionary process but owing to the conscious action of a minority.

George Orwell  
*Politics of the English Language*

The necessity for change is the parent of tradition. If we want a change in our language to come, we must first facilitate that change through concerted action. Our language is determined both by who we are as individuals and communities, and who we want to become.

The affirmation of the integrity of people with various opinions and interpretations on the issue of language is assumed. It is recognized, however, that exclusive language can work unwitting and unintended harm by distorting reality and excluding members from our community. Therefore, all members of this Duke Divinity School community (students, faculty, administrators, and staff) are invited to join together in using language that most adequately reflects the unity of the people of God and the reality of God.

### LANGUAGE ABOUT PERSONS

#### A. Generic Usage

Although "man" originally carried the meaning of both "human beings" and "adult males," such can no longer be assumed. Even though technically "man" is inclusive, its actual use is often exclusive.

1. Use precise language. When in the past you would have been inclined to use the generic term "man," find creative ways to use such words as "humankind," "humans," "persons," "everyone," "men and women," "children of God," etc.
2. Use words that do not include "man" when referring to occupations and positions that can include both males and females. Alternative descriptions can often be found that are not awkward compounds:

|                     |   |
|---------------------|---|
| <i>(instead of)</i> | <i>(try)</i>                                  |
| Clergyperson        | Clergy  |
| Congressperson      | Representative                                |
| Policeman           | Police Officer                                |
| Fireman             | Fire Fighter                                  |
| Chairperson         | Chair, Moderator, Presiding Officer, Convenor |

#### B. Pronoun Usage

Pronoun usage that avoids gender specific categories is an effective way to include all members of society or a given community in general references. Although English grammars generally maintain that the nonspecific individual be referred to as "he," such a reference is not inclusive. One should attempt to make all pronoun references inclusive.

1. When speaking in general terms or when referring to both women and men, use pronouns so as to make explicit that both men and women are included. This may be accomplished by using such methods as "he and she," "hers and his," or combinations such as "he/she," "s/he," and "his/hers."
2. Other approaches to the pronoun issue include:
  - a. Use writing that reduces unnecessary or excessive gender specific pronouns: "The average American drives his car to work" can become "The average American drives to work."

- b. Rephrase statements into the plural: "Most Americans drive their cars to work."
- c. When speaking in generic terms or when including women and men in the same group, some guides suggest alternating female and male pronouns: "A person should take good care of her car. He should check the oil level daily. She should also make sure that the tires are properly inflated."
- d. The indefinite use of the second person plural pronoun, "you," to refer to people in general is a widespread conversational device. You must realize, however, that the use of the second person in writing creates an intimate relationship between the writer and the reader. For this reason, when you use the second person, be sure that the person or persons to whom the argument is directed is clearly identified.
- e. Masculine pronouns can be replaced by the impersonal pronoun "one," and this is still preferred in formal usage. However, one should use this form sparingly.

#### C. Forms of Address

Traditionally there has been little need for particular ways to refer to individual women or married individuals with different titles. Women did not have titles other than "Miss" or "Mrs.," and it was assumed that their identity derived from their marital status. That assumption is no longer valid, and forms of address should recognize the identity that women have as individuals.

1. In referring to an individual woman there is no need to refer to her marital status, just as traditional references to men give no indication of their marital status. Examples:
  - a. Ms. Lorna Stafford
  - b. The Reverend Ms. Louise Lind
  - c. The Reverend Mr. Louis Lind
  - d. Dr. Jennifer Jones
2. Different titles should be recognized when addressing married couples. Examples:
  - a. Clergywoman married to a layperson: The Reverend Ms. Sally Jones and Mr. Gerald Jones
  - b. Clergy couples: The Reverends Ms. Sally Smith and Mr. Gerald Jones; The Reverends Ms. Sally Jones and Mr. Gerald Jones; The Reverends M/M Sally and Gerald Jones
  - c. Other titles: Professor Louise Lind and Dr. Jonathan Smith; Drs. Cynthia and Jackson Whittaker
3. Although the use of individual names is assumed when married people have different titles, this is desirable for others as well. Instead of Mr. and Mrs. Steve Jackson, try:
  - a. Steve and Lorna Jackson
  - b. Mr. and Mrs. Steve and Lorna Jackson
  - c. M/M Steve Jackson and Lorna Stafford
4. Titles can be eliminated altogether, but in formal usage this practice is generally not preferred.

#### D. References to Collective and Abstract Nouns

Social institutions (e.g., Church), concepts (e.g., evil), or inanimate objects (e.g., a ship) do not have gender. Referring to them as female or male encourages stereotyping groups of people with the qualities specific to that institution, concept, or object.

1. Pronouns that refer to collective and abstract nouns should be neuter, except in direct quotations.



- a. Direct quotation: "And I saw the holy city, new Jerusalem, coming down out of heaven from God, prepared as a bride adorned for her husband. ..." (Rev. 21:2).
  - b. Modern usage: The Church is described as the new Jerusalem. It is adorned for the worship of God, and its relationship with God is seen as a gift from God.
2. Direct quotations can often be made inclusive through the use of brackets: "A person must make his [or her] own way in this broken world."

## LANGUAGE ABOUT GOD

Although these guidelines are designed mainly for use in terms of language about people, care and attention should be given also to language about God in writing, speaking, and worship. Language about God should articulate the variety and richness of God's manifestations to humankind. It should also respect the deeply personal nature of God as expressed through the Trinity. These suggestions are offered as a beginning point from which one can develop androgynous language about God.

- A. The exclusive use of either masculine or feminine pronouns for God should be avoided.
- B. Metaphors showing God's personal relationship with humans should be used, but need not be personalized with "he" or "she."
- C. A variety of sex-specific metaphors can be used: "God is the father who welcomes his son home, but she is also the woman who searches for the lost coin."

Imagination, patience, and diligence are required in order to use language that expands and enriches our understanding of God.

## II. JUDICIAL PROCEDURES

### Duke Divinity School

Adopted January 1987, The Divinity School Community:

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.... Any student, in accepting admission, indicates willingness to subscribe to and be governed by these rules and regulations, and acknowledges the right of the university to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the university.

*The Bulletin of Duke University: The Divinity School:*  
"Admissions: Conduct of Students"

The judicial system hereinafter described is constituted for the Divinity School community as required by the Judicial System of Duke University and the university's rubric on student life. It conforms to and functions within those larger structures. Reference will be made in this document to the most readily available specification of university rules, the *Bulletin of Duke University: Information and Regulations*, which may be consulted in the office of either associate dean or in the Divinity School Library and obtained through the Office of Student Life of Trinity College. See sections on "Student Life" and Appendix entitled "The Judicial System of Duke University."

### The Divinity School Judicial Board

The Divinity School Judicial Board [hereinafter simply "the board"] is composed of the two associate deans and five students (one of whom shall be designated an alternate) and three faculty or staff members (one of whom shall be designated an alternate). They shall be chosen respectively by the Student Representative Assembly and the Divinity School faculty through the normal procedures for constituting committees. The board is constituted at the opening of school in the fall; members serve until the opening of the next school year

or until replaced by their respective governing bodies. At its first meeting, the board shall elect a chair from among its appointed and regular membership.

A. Hearing Alternatives.

Students accused of violating university regulations or academic expectations may elect either: (1) an informal hearing in which the accused student and the accusing student, faculty member or staff member appear before the appropriate associate dean [see below] and the student's faculty adviser; or (2) a formal hearing before the board according to procedures outlined below. (If the severity of the offense dictates or if procedural difficulties loom, the chair and associate dean may determine that a formal hearing is required or that higher university boards or civil courts must have jurisdiction.) Under either option, the person accused may be advised by a person from within the Divinity School community. The adviser may attend but may not speak during the hearing and will be excused during deliberation over verdict and sanctions.

B. Jurisdiction.

Matters concerning academic offenses—cheating, plagiarism, theft of papers, library misconduct—shall be heard, formally or informally, by the university associate dean for academic programs. Offenses concerning student life, the university community, field education, or professional ethics shall be heard, formally or informally, by the associate dean for student life and field education.

C. Offenses.

Among the academic offenses deemed unacceptable at Duke University are plagiarism—the submission of work as one's own that contains unacknowledged or improperly acknowledged words or ideas of another—submission of papers in more than one course without the explicit permission of the instructors concerned, the purchase or theft of papers, cheating, and abuse of the library. Student life offenses include abuse of university property, theft, falsification of financial aid applications, use of illegal substances and physical, mental or sexual harassment. For detailed specification and illustration of student life offenses see the aforementioned *Bulletin: Information and Regulations* under "Student Life" and "University Regulations and Policies."

The same volume treats academic offenses in the section entitled "Academic Honesty." Students are advised to purchase at the Duke University Bookstore the *Composition Guide—Duke University* by Renal R. Butters, which provides detailed guidance on correct procedure and clear illustrations of impermissible practice.

D. Duties of the Associate Deans.

The associate deans shall be responsible for hearing complaints, conducting investigations, gathering evidence, determining probable cause, establishing whether the Divinity School Board has jurisdiction, specifying the charge, informing the accused of his/her rights, indicating the hearing options, impaneling the board in the event of a formal hearing, preparing the case, setting the date for a hearing, producing witnesses, and imposing any sanctions or penalties.

E. Formal Hearings.

1. If the student elects (or the associate dean specifies) a formal hearing, the associate dean with jurisdiction shall convene the board at the earliest possible point.
2. A faculty or student member shall disqualify himself/herself if he/she is otherwise involved in the case, and the student charged may challenge the seating of a faculty or student member of the board (stating in writing the reasons for so doing). The chair (or in the event of a challenge to the chair,

the associate dean) shall accept or reject the challenge. In the event of a disqualification of a member, the appropriate alternate shall be seated.

3. Hearings shall be closed. Formal hearings shall be recorded and the recording retained for a period of three years.

F. Hearing Procedures.

1. The rights of the accused and the hearing procedures outlined in sections I "Role of Accused" and J "Hearing Procedure," in the "Judicial System of Duke University," Appendix of *Bulletin: Information and Regulations* shall guide the associate dean and the adviser or the board in the conduct of a hearing (e.g. judgments of expulsion or suspension require concurrence of four of the five voting board members).
  2. The board (or associate dean and faculty adviser) may impose the sanctions specified in the same Appendix singly or in combination (e.g. expulsion, suspension, probation, warning, fine, recommendation of counseling, etc.).
- G. A person convicted may appeal his/her case to the dean by providing written notice of that intention within forty-eight hours and a written statement of the grounds within seven days of the receipt of the verdict. Grounds for appeal include new and significant evidence that might alter the case or violation of due process.

### III. THE HONOR CODE

Ministerial and theological education involves developing and shaping a life of honor and integrity, virtues rooted in our faith.

Therefore, we in the Divinity School of Duke University pledge, individually and corporately, to exhibit our commitment to these virtues by abstaining from any form of cheating, lying, or plagiarism\* and by respecting the facilities of the Divinity School and the property of our peers and professors. We do also assume responsibility for the maintenance of these virtues by pledging, individually, and corporately, to report any violation of this code to the deans associated with the Judicial Board of the Divinity School.

I signify my understanding of this code by signature.+

Revised 11/30/88 by SRA.

(Signed)

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\* Definitions and illustration of these violations are provided in the current *Bulletin of Duke University: Information and Regulations* in sections entitled "The Judicial Code" and "Academic Honesty." Detailed discussion of correct and incorrect writing styles (e.g. plagiarism) can be found in *Composition Guide...Duke University* prepared by Ronald R. Butters in collaboration with George D. Gopen. This is available in the Divinity School Copyroom. All students are urged to purchase a copy and to read it carefully.

+ Refusal to sign does not exempt one from the dictates of this code. Violation of all or part of this code will subject the accused to review and action by the Judicial Board of the Divinity School.



## ENROLLMENT SUMMARY 1995-96

### Divinity School Students, total 503 (excluding auditors)

|     |          |                      |
|-----|----------|----------------------|
| 388 | M.Div.   | (266 men, 122 women) |
| 16  | M.R.E.   | ( 4 men, 12 women)   |
| 39  | Th.M.    | ( 33 men, 6 women)   |
| 20  | Special  |                      |
|     | Students | ( 8 men, 12 women)   |
| 40  | M.T.S.   | ( 24 men, 16 women)  |

### Graduate Division of Religious Studies, total 100

4 M.A., 100 Ph.D.

Total 608

### GEOGRAPHICAL DISTRIBUTION 1995-96

|                      |     |                 |            |
|----------------------|-----|-----------------|------------|
| Alabama              | 6   | New York        | 7          |
| Arkansas             | 6   | Ohio            | 1          |
| California           | 4   | Oklahoma        | 1          |
| Colorado             | 1   | Pennsylvania    | 6          |
| Connecticut          | 1   | South Carolina  | 12         |
| District of Columbia | 1   | Tennessee       | 6          |
| Florida              | 27  | Texas           | 17         |
| Georgia              | 8   | Virginia        | 29         |
| Illinois             | 2   | Washington      | 1          |
| Indiana              | 9   | West Virginia   | 4          |
| Kentucky             | 2   | Wisconsin       | 1          |
| Kansas               | 1   |                 |            |
| Louisiana            | 2   | <b>Foreign:</b> | <b>14</b>  |
| Maryland             | 2   | Canada          | 1          |
| Massachusetts        | 2   | China           | 1          |
| Michigan             | 2   | Germany         | 1          |
| Minnesota            | 2   | Japan           | 4          |
| Mississippi          | 11  | Korea           | 4          |
| Missouri             | 4   | Liberia         | 2          |
| North Carolina       | 306 | Singapore       | 1          |
| New Mexico           | 2   | Taiwan          | 1          |
|                      |     | <b>Total</b>    | <b>515</b> |

### DENOMINATIONS REPRESENTED 1995-96

|   |    |                                   |                                   |
|---|----|-----------------------------------|-----------------------------------|
| African Methodist                         | 1  | Lutheran                          | 3                                 |
| African Methodist Episcopal               | 4  | Mennonite                         | 2                                 |
| AME Zion                                  | 5  | Mennonite Brethren                | 1                                 |
| American Baptist                          | 4  | Methodist Church in Singapore     | 3                                 |
| Anglican                                  | 1  | Missionary Baptist                | 2                                 |
| Anglican Catholic                         | 1  | Nazarene                          | 1                                 |
| Anglican Church in America                | 1  | Nondenominational                 | 4                                 |
| Assemblies of God                         | 2  | Original United Holy Church       |                                   |
| Baptist                                   | 34 | International                     | 1                                 |
| Christian Church (Disciples of Christ)    | 2  | Pentecostal Holiness              | 3                                 |
| Christian Methodist Episcopal             | 1  | Presbyterian                      | 17                                |
| Christian and Missionary Alliance         | 1  | Reformed Church                   | 1                                 |
| Church of God                             | 5  | Roman Catholic                    | 5                                 |
| Church of God of Prophecy                 | 1  | Southern Baptist                  | 34                                |
| Episcopal                                 | 26 | Unitarian Universalist            | 3                                 |
| Evangelical Lutheran Ch. in America       | 4  | United Church of Christ           | 7                                 |
| Free Methodist                            | 1  | United Church of Zambia/Methodist |                                   |
| Greek Orthodox                            | 1  | Church in Great Britain           | 1                                 |
| Holiness                                  | 1  | United Methodist Church           | 302                               |
| Interdenominational                       | 1  | Unreported                        | 13                                |
| Japan Holiness Ch. (Evangelical Wesleyan) | 1  | Wesleyan                          | 1                                 |
| Korean Evangelical Holiness Church        | 1  | <b>Total</b>                      | <b>503 plus 12 auditors = 515</b> |

**COLLEGES AND UNIVERSITIES  
REPRESENTED—UNDERGRADUATE DEGREES**

|                                  |    |                                    |   |
|----------------------------------|----|------------------------------------|---|
| A&T State Univ.                  | 1  | East Carolina Univ.                | 8 |
| Agnes Scott Coll.                | 1  | Eastern Iowa Community Coll.       | 1 |
| Alcorn A&M Univ.                 | 1  | Eastern Mennonite Coll.            | 1 |
| Allegheny Coll.                  | 3  | Eastern Nazarene Coll.             | 1 |
| Alma Coll.                       | 1  | Eckerd Coll.                       | 1 |
| Anderson Univ.                   | 2  | Elizabethtown Coll.                | 1 |
| Appalachian State Univ.          | 6  | Elon Coll.                         | 4 |
| Arkansas Coll.                   | 2  | Emory and Henry Coll.              | 4 |
| Arkansas Tech. Univ.             | 1  | Emory Univ.                        | 3 |
| Auburn Univ.                     | 1  | Erskine Coll.                      | 1 |
| Australian National Univ.        | 1  | Evangel Coll.                      | 1 |
| Averett Coll.                    | 1  | Faulkner State.                    | 1 |
| Azusa Pacific Univ.              | 1  | Fayetteville State Univ.           | 2 |
| Ball State Univ.                 | 2  | Florida A&M Univ.                  | 2 |
| Baptist Bible Coll.              | 1  | Florida International Univ.        | 1 |
| Barton Coll.                     | 4  | Florida Junior Coll.               | 1 |
| Baylor Univ.                     | 7  | Florida Southern Coll.             | 6 |
| Bellarmino Coll.                 | 1  | Florida State Univ.                | 7 |
| Berea Coll.                      | 1  | Francis Marion Univ.               | 2 |
| Bethany Lutheran Coll.           | 1  | Franklin and Marshall Coll.        | 1 |
| Bethune-Cookman Coll.            | 1  | Fresno Pacific Coll.               | 1 |
| Birmingham Southern Coll.        | 2  | Friends Univ.                      | 1 |
| Bob Jones Univ.                  | 1  | Furman Univ.                       | 4 |
| Boston Univ.                     | 2  | Gardner-Webb Univ.                 | 4 |
| Bowling Green State Univ.        | 2  | Geneseo State Coll.                | 1 |
| Bradley Univ.                    | 1  | Georgia Inst. of Technology        | 1 |
| Brevard Coll.                    | 2  | Gettysburg Coll.                   | 1 |
| Brooklyn Coll.                   | 1  | Gordon Coll.                       | 1 |
| Brown Univ.                      | 1  | Greensboro Coll.                   | 5 |
| Bucknell Univ.                   | 2  | Grove City Coll.                   | 1 |
| California Baptist Coll.         | 1  | Guilford Coll.                     | 3 |
| California State Univ.           | 1  | Hampden-Sydney Coll.               | 3 |
| Campbell Univ.                   | 11 | Hampshire Coll.                    | 2 |
| Carson-Newman Coll.              | 4  | Hanover Coll.                      | 1 |
| Catawba Coll.                    | 1  | Harvard Univ.                      | 2 |
| Catawba Valley Tech. Inst.       | 1  | Henderson State Univ.              | 1 |
| Centenary Coll.                  | 3  | Hendrix Coll.                      | 2 |
| Central Carolina Community Coll. | 1  | High Point Univ.                   | 8 |
| Central Michigan Univ.           | 2  | Homkuk Univ.                       | 1 |
| Central Wesleyan Coll.           | 1  | Houston Baptist Univ.              | 1 |
| Centre Coll.                     | 2  | Howard Univ.                       | 2 |
| Coastal Carolina Univ.           | 1  | Humboldt State Univ.               | 1 |
| Coll. Misericordia               | 1  | Hunter Coll.                       | 2 |
| Coll. of Charleston              | 1  | Huntingdon Coll.                   | 1 |
| Coll. of William and Mary        | 4  | Illinois State Univ.               | 1 |
| Coll. of Wooster                 | 1  | Indiana Univ.                      | 3 |
| Colorado Coll.                   | 1  | International Christian Univ.      | 1 |
| Columbia Coll.                   | 1  | International Correspondence Inst. | 1 |
| Columbia Univ.                   | 1  | Jacksonville Univ.                 | 1 |
| Concordia Coll.                  | 1  | James Madison Univ.                | 2 |
| Converse Coll.                   | 3  | Jamestown Community Coll.          | 1 |
| Cornell Univ.                    | 2  | John Wesley Coll.                  | 1 |
| Curtis Inst. of Music            | 1  | Johnson C. Smith Univ.             | 1 |
| Davidson Coll.                   | 5  | Kalamazoo Coll.                    | 1 |
| Dillard Univ.                    | 1  | King Coll.                         | 1 |
| Drew Univ.                       | 1  | Kings Coll.                        | 1 |
| Duke Univ.                       | 7  | Kun Kuk Univ.                      | 1 |
| Durham Tech. Community Coll.     | 1  | Lambuth Univ.                      | 2 |

|                               |    |                                |    |
|-------------------------------|----|--------------------------------|----|
| Lee Coll.                     | 1  | Rochester Inst. of Tech.       | 1  |
| Leipzig Univ.                 | 1  | Rollins Coll.                  | 1  |
| Lenoir-Rhyne Coll.            | 3  | Rutgers Univ.                  | 1  |
| Liberia Baptist Theo. Sem.    | 1  | Salem Coll.                    | 1  |
| Livingston Coll.              | 1  | Samford Univ.                  | 5  |
| Livingstone Coll.             | 1  | Sandhills Community Coll.      | 1  |
| London Univ.                  | 1  | Seattle Pacific Univ.          | 2  |
| Long Island Univ.             | 1  | Seoul National Univ.           | 2  |
| Longwood Coll.                | 2  | Seoul Theo. Univ.              | 1  |
| Louisiana State Univ.         | 2  | Shaw Univ.                     | 4  |
| Loyola Univ.                  | 1  | Sioux Falls Coll.              | 1  |
| Lynchburg Coll.               | 3  | Smith Coll.                    | 1  |
| Mankato State Univ.           | 1  | Soochow Univ.                  | 1  |
| Mars Hill Coll.               | 2  | Southeastern Coll. of AOG      | 2  |
| Marshall Univ.                | 1  | Southern Asia Bible Coll.      | 1  |
| Mary Baldwin Coll.            | 2  | Southern Baptist Coll.         | 1  |
| Mary Washington Coll.         | 1  | Southern Wesleyan Univ.        | 1  |
| McMurry Univ.                 | 1  | Southwestern Baptist Sem.      | 1  |
| Mercer Univ.                  | 3  | St. Andrews Presbyterian Coll. | 2  |
| Meredith Coll.                | 5  | St. Augustine's Coll.          | 1  |
| Messiah Coll.                 | 1  | St. Leo Coll.                  | 2  |
| Methodist Coll.               | 6  | St. Leo's Coll.                | 1  |
| Methodist Theo. Sem.          | 1  | St. Mary's Coll.               | 1  |
| Miami Dade Community Coll.    | 1  | St. Olaf Coll.                 | 1  |
| Miami Univ. (Ohio)            | 1  | State Univ. of New York        | 2  |
| Michigan State Univ.          | 2  | Stephen F. Austin State Univ.  | 1  |
| MidAmerica Nazarene Coll.     | 2  | Stratford Coll.                | 1  |
| Millsaps Coll.                | 8  | SUNY-Binghamton                | 1  |
| Mississippi Coll.             | 1  | Sweet Briar Coll.              | 1  |
| Mississippi State Univ.       | 2  | Syracuse Univ.                 | 1  |
| Monterrey Technical Inst.     | 1  | Taylor Univ.                   | 1  |
| Morehouse Coll.               | 2  | Tennessee Wesleyan Coll.       | 1  |
| Mount Union Coll.             | 1  | Texas Christian Univ.          | 1  |
| Nanyang Univ.                 | 1  | The Citadel                    | 2  |
| NC A&T State Univ.            | 8  | Tidewater Community Coll.      | 1  |
| NC Baptist School of Nursing  | 1  | Trenton State Coll.            | 2  |
| NC Central Univ.              | 5  | Trinity Theo. Coll.            | 1  |
| NC State Univ.                | 24 | Trinity Univ.                  | 1  |
| NC Wesleyan Coll.             | 6  | UNC-Asheville                  | 3  |
| New Mexico State Univ.        | 1  | UNC-Chapel Hill                | 24 |
| Newberry Coll.                | 1  | UNC-Charlotte                  | 4  |
| North Carolina Wesleyan Coll. | 1  | UNC-Greensboro                 | 17 |
| North Central Coll.           | 1  | UNC-Wilmington                 | 1  |
| Northern Illinois Univ.       | 1  | Univ. Northern Colorado        | 1  |
| Oberlin Coll.                 | 1  | Univ. of Arizona               | 1  |
| Ohio Northern Univ.           | 1  | Univ. of Arkansas              | 1  |
| Ohio State Univ.              | 1  | Univ. of Baltimore             | 1  |
| Oklahoma City Univ.           | 2  | Univ. of California            | 1  |
| Old Dominion Univ.            | 3  | Univ. of Central Florida       | 1  |
| Onondago Community Coll.      | 1  | Univ. of Cincinnati            | 1  |
| Oral Roberts Univ.            | 3  | Univ. of Colorado              | 1  |
| Pembroke State Univ.          | 5  | Univ. of Connecticut           | 1  |
| Penn State Univ.              | 5  | Univ. of Denver                | 2  |
| Pfeiffer Coll.                | 8  | Univ. of Evansville            | 2  |
| Polk Community Coll.          | 1  | Univ. of Florida               | 1  |
| Presbyterian Coll.            | 1  | Univ. of Georgia               | 2  |
| Purdue Univ.                  | 1  | Univ. of Ghana Med. School     | 1  |
| Queens Coll.                  | 2  | Univ. of Hawaii-Manoa          | 1  |
| Radford Univ.                 | 1  | Univ. of Houston               | 1  |
| Randolph-Macon Coll.          | 3  | Univ. of Indianapolis          | 2  |
| Regents Coll.                 | 1  | Univ. of Lancaster             | 1  |



|                               |   |                                     |    |
|-------------------------------|---|-------------------------------------|----|
| Univ. of Maine                | 1 | Wittenberg Univ.                    | 1  |
| Univ. of Maine-Machias        | 1 | Wofford Coll.                       | 7  |
| Univ. of Maryland             | 2 | WV Inst. of Technology              | 1  |
| Univ. of Michigan             | 2 | Yale Univ.                          | 1  |
| Univ. of Mississippi          | 2 | Young Harris Coll.                  | 1  |
| Univ. of Missouri             | 2 |                                     |    |
| Univ. of Missouri-Rolla       | 1 | <b>COLLEGES AND UNIVERSITIES</b>    |    |
| Univ. of Mobile               | 2 | <b>REPRESENTED-GRADUATE DEGREES</b> |    |
| Univ. of Nebraska             | 1 |                                     |    |
| Univ. of New Haven            | 1 | AOG Theo. Sem.                      | 1  |
| Univ. of New Mexico           | 1 | Appalachian State Univ.             | 1  |
| Univ. of North Texas          | 1 | Asbury Theo. Sem.                   | 4  |
| Univ. of Oklahoma             | 1 | Auburn Univ.                        | 2  |
| Univ. of Pennsylvania         | 1 | Azusa Pacific Univ.                 | 1  |
| Univ. of Richmond             | 3 | Ball State Univ.                    | 2  |
| Univ. of South Alabama        | 1 | Bank Street Coll.                   | 1  |
| Univ. of SC-Coastal Carolina  | 2 | Bonn Univ.                          | 1  |
| Univ. of Sioux Falls          | 1 | Boston Univ.                        | 1  |
| Univ. of South Carolina       | 4 | Bowling Green State Univ.           | 1  |
| Univ. of Southern Mississippi | 4 | Brooklyn Coll.                      | 2  |
| Univ. of Tennessee            | 1 | Central Michigan Univ.              | 1  |
| Univ. of Texas                | 2 | Church of God School of Theo.       | 1  |
| Univ. of Texas at Austin      | 2 | Cleveland State Univ.               | 1  |
| Univ. of the South            | 3 | Columbia Theo. Sem.                 | 1  |
| Univ. of Toronto              | 1 | Columbia Univ.                      | 1  |
| Univ. of Vermont              | 1 | Concordia Sem.                      | 1  |
| Univ. of Virginia             | 3 | Divinity School of Seoul Theo.      | 1  |
| Univ of Waterloo              | 1 | Duke Divinity School                | 15 |
| Univ. of West Alabama         | 1 | Duke Univ.                          | 3  |
| Univ. of Western Ontario      | 1 | East Carolina Univ.                 | 3  |
| Univ. of Wisconsin-Eau Clair  | 1 | Emory Univ.                         | 5  |
| Univ. State of New York       | 1 | Florida Southern Coll.              | 1  |
| US Coast Guard Academy        | 1 | Florida State Univ.                 | 6  |
| US Naval Academy              | 1 | Fordham Univ.                       | 1  |
| Utah State Univ.              | 1 | Gordon-Conwell Theo. Sem.           | 1  |
| Univ. of Texas at Austin      | 1 | Guilford Tech. Community Coll.      | 1  |
| Vanderbilt Univ.              | 2 | Hartford Sem.                       | 1  |
| Virginia Commonwealth Univ.   | 4 | Hesston Coll.                       | 1  |
| Virginia Poly. Inst.          | 1 | Holy Cross Coll.                    | 1  |
| Virginia Tech.                | 1 | Huntington Graduate School          | 1  |
| Virginia Union Univ.          | 2 | Illinois State Univ.                | 1  |
| Virginia Wesleyan Coll.       | 4 | Indiana State Univ.                 | 1  |
| Wagner Coll.                  | 1 | Indiana Univ.                       | 3  |
| Wake Forest Univ.             | 9 | Jacksonville Univ.                  | 1  |
| Warren Wilson Coll.           | 1 | Jefferson Medical Coll.             | 1  |
| Washington and Lee Univ.      | 2 | Juilliard School of Music           | 1  |
| Waynesburg Coll.              | 1 | Kent Coll. of Law                   | 1  |
| Wellesley Coll.               | 1 | Kobe Lutheran Theo. Sem.            | 1  |
| Wesleyan Univ.                | 1 | London Univ.                        | 1  |
| Westchester Univ.             | 1 | Lutheran Theo. Sem.                 | 1  |
| West Texas A&M Univ.          | 1 | Lutheran Theo. Southern Sem.        | 1  |
| West Virginia State Coll.     | 1 | Methodist Coll.                     | 2  |
| West Virginia Univ.           | 1 | Methodist Theo. Sem.                | 1  |
| West Virginia Wesleyan Coll.  | 3 | Minot State Univ.                   | 1  |
| Western Kentucky Univ.        | 1 | Mississippi State Univ.             | 1  |
| Western North Carolina Univ.  | 1 | Murray State Univ.                  | 1  |
| Wheaton Coll.                 | 2 | Naval Postgraduate School           | 1  |
| Williams Coll.                | 1 | NC A&T State Univ.                  | 2  |
| Wingate Univ.                 | 1 | NC State Univ.                      | 1  |
| Winona State Univ.            | 1 | Nova Southeastern Univ.             | 1  |
| Winston-Salem State Univ.     | 2 | Ohio Univ.                          | 1  |

|                                      |    |                                      |   |
|--------------------------------------|----|--------------------------------------|---|
| Oklahoma State Univ.                 | 1  | UNC-Greensboro                       | 1 |
| Oral Roberts Univ.                   | 1  | Univ. of Alabama                     | 1 |
| Penn State Univ.                     | 1  | Univ. of Arkansas                    | 1 |
| Perkins School of Theo.              | 2  | Univ. of California-San Francisco    | 1 |
| Pfeiffer Coll.                       | 1  | Univ. of Florida                     | 1 |
| Pittsburgh Theo. Sem.                | 1  | Univ. of Kentucky                    | 1 |
| Presbyterian School of Christian Ed. | 1  | Univ. of London-King's Coll.         | 1 |
| Radford Univ.                        | 1  | Univ. of Mississippi                 | 1 |
| Regent Univ.                         | 1  | Univ. of North Florida               | 1 |
| Rice Univ.                           | 1  | Univ. of Oklahoma Law School         | 1 |
| Rutgers Univ.                        | 1  | Univ. of Pittsburgh                  | 1 |
| Scarritt Coll.                       | 1  | Univ. of South Carolina              | 1 |
| Shaw Divinity School                 | 1  | Univ. of Southern Mississippi        | 1 |
| Southeastern Baptist Theo. Sem.      | 3  | Univ. of Sydney                      | 1 |
| Southern Baptist Theo. Sem.          | 3  | Univ. of Virginia                    | 1 |
| St. Leo's Coll.                      | 1  | Univ. of Wisconsin-Madison           | 1 |
| SUNY Binghamton                      | 1  | Virginia Commonwealth Univ.          | 1 |
| Taiwan Theo Coll. and Sem.           | 1  | Virginia Union Univ. School of Theo. | 3 |
| Trinity Theo Coll.                   | 1  | Vincennes Univ.                      | 1 |
| Tulane Univ.                         | 1  | Wagner Coll.                         | 1 |
| UNC-Chapel Hill                      | 14 | Wake Forest Univ.                    | 4 |
| UNC-Charlotte                        | 2  | Yale Divinity School                 | 3 |







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*bulletin of*  
**Duke University**  
**1996-97**

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*The Fuqua School of Business*







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*bulletin of*  
**Duke University**  
**1996-1997**

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*The Fuqua School of Business*

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The information in this bulletin applies to the academic year 1996-97 and is accurate and current, to the extent possible, as of August 1995. The university reserves the right to change programs of study, academic requirements, teaching staff, the calendar, and other matters described herein without prior notice, in accordance with established procedures.

Information that the university is required to make available under the Student Right to Know and Campus Security Acts may be obtained from the Office of University Relations at (919) 684-2823 or in writing to 615 Chapel Drive, Duke University, Durham, North Carolina 27708.



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# University Administration

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# THE FUQUA SCHOOL OF BUSINESS CALENDAR\*

## MBA Academic Calendar

### Fall 1996

|                  |   |
|------------------|---|
| <b>August</b>    |   |
| 19-20            | Exemption Exams for MBA Class of 1998     |
| 19-23            | Orientation and Registration              |
| 25-30            | Integrated Learning Experiences 1 & 3     |
| <b>September</b> |   |
| 2                | Labor Day, Term 1 classes begin           |
| 25               | All Sept. 28 MBA classes move to Sept. 27 |
| 26               | All Sept. 29 MBA classes move to Sept. 28 |
| 27               | Job Fair, NO MBA CLASSES                  |
| <b>October</b>   |   |
| 11               | Term 1 ends                               |
| 15-18            | Term 1 exams                              |
| 21-25            | FALL BREAK                                |
| 28               | Term 2 classes begin                      |
| <b>November</b>  |   |
| 20-22            | THANKSGIVING BREAK                        |
| <b>December</b>  |   |
| 10               | Term 2 ends                               |
| 14-17            | Term 2 exams                              |

### Spring 1997

|                 |                                       |
|-----------------|---------------------------------------|
| <b>January</b>  |                                       |
| 20              | Term 3 classes begin                  |
| <b>February</b> |                                       |
| 28              | Term 3 ends                           |
| <b>March</b>    |                                       |
| 4-7             | Term 3 exams                          |
| 10-14           | SPRING BREAK                          |
| 17-21           | Integrated Learning Experiences 2 & 4 |
| 24              | Term 4 classes begin                  |
| <b>May</b>      |                                       |
| 2               | Term 4 ends                           |
| 6-9             | Term 4 exams                          |
| 17-18           | Commencement                          |

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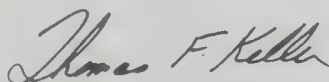
\* Dates of the 1996-97 calendar are subject to change by the provost of Duke University during the 1995-96 year.

## A Message from the Dean

In his indenture establishing Duke University, James Buchanan Duke called for, among many other components of a research university, a school of business administration. The Board of Trustees of Duke University, in 1969, established the Graduate School of Business Administration with a mandate to provide programs in management education of the highest quality. In 1980 the school was renamed to honor J. B. Fuqua of Atlanta, Georgia, who is an emeritus member of the University's Board of Trustees and an active member of the Fuqua School's Board of Visitors. Mr. Fuqua continues to support the school through his generosity and his participation in its programs.

The mission of the Fuqua School of Business is to provide the highest quality education for business and academic leaders, and promote the advancement of the understanding and practice of management through research. Our approach is to prepare men and women to meet their career opportunities with a strong education which balances generalist and functional skills, as well as with an awareness of the need to balance individual leadership and a sense of team. We seek students who possess high academic standards and demonstrate the ability to think creatively. These are important qualities for business leadership and are reflected in the orientation of our entire program. As a school, we are committed to retaining our flexibility and our responsiveness to management needs as they arise in the business community.

Our heritage at Duke is a tradition of excellence in education. At the Fuqua School we have built on this heritage to develop programs that enable graduates to meet the challenges of leadership in business, government, and educational organizations.

A handwritten signature in dark ink, reading "Thomas F. Keller". The signature is fluid and cursive, with the first name "Thomas" being more prominent and the last name "Keller" following in a similar style.

Thomas F. Keller  
*Dean*

## *General Information*





## Duke University

In 1839 a group of citizens from Randolph and adjacent counties in North Carolina assembled in a log schoolhouse to organize support for a local academy founded a few months earlier by Brantley York. Prompted, they said, by “no small share of philanthropy and patriotism,” they espoused their belief that “ignorance and error are the banes not only of religious but also civil society which rear up an almost impregnable wall between man and happiness.” Union Institute, which they then founded, was reorganized first in 1851 as Normal College to train teachers, and eight years later as Trinity College, a liberal arts college, which later moved to the growing city of Durham, North Carolina. With the establishment of the James B. Duke Indenture of Trust in 1924, Trinity College became Duke University.

Today, Duke is a two-campus institution with a student body of about 9,000, of whom 3,000 are enrolled in the graduate and professional programs. Established in 1969, the Graduate School of Business Administration joined the Schools of Medicine, Nursing, Law, Engineering, Divinity, and Forestry in preparing qualified individuals for professional leadership and developing excellence in education for the professions.

**The Campus.** The main campus (West) of Duke University is a beautifully designed complex of buildings in Gothic architecture, bordered on the east by the Sarah P. Duke Gardens and on the west by the 8,000-acre Duke Forest. This campus is dominated by the Duke Chapel, whose 210-foot-high tower houses a 50-bell carillon. The William R. Perkins Library is one of the largest research libraries in the country. The facility for the Fuqua School of Business is located on West Campus near the intersection of Science Drive and Towerview Drive. The East Campus is a smaller complex of Georgian-style buildings and has, as major points of interest, the Duke University Museum of Art and the Mary Duke Biddle Music Building.

Durham is a part of the Research Triangle, an area formed by Duke University, the University of North Carolina at Chapel Hill, and North Carolina State University at Raleigh. The Research Triangle Park, a 5,400-acre campus for research laboratories, governmental agencies, and research-oriented industries, is recognized as one of the world's leading science centers. Durham, located near the center of the state, has easy access to the Great Smokies of the Appalachian Mountains and to the scenic and historic beaches of the Outer Banks. The area offers varied cultural and recreational activities ranging from concerts, opera, dance, theater, and recitals to intramural and collegiate sports, boating, skiing, camping, and other outdoor activities.

**The Fuqua School of Business.** Recognizing the importance of business education, Duke University's Board of Trustees established the Graduate School of Business in 1969, with the mandate to provide management education programs of the highest quality. The school began with two programs; an undergraduate major in management science, which now no longer exists, and a fledgling M.B.A. Program that graduated its first class of twelve students in 1972. Since that time, the school has grown to include five major academic programs, a faculty of eighty-eight, and over 800 masters degree candidates

enrolled in daytime and executive M.B.A. programs. The school also offers a wide range of nondegree executive education programs and seminars.

J. B. Fuqua, chairman, The Fuqua Companies, Atlanta, Georgia, has supported the school generously in its development. In honor of Mr. Fuqua's contribution to the school and personal participation in its growth, the school was renamed the Fuqua School of Business in 1980 by proclamation of the Board of Trustees.

In January of 1983, the Fuqua School of Business moved into its present building on Science Drive on Duke University's West Campus. This building, designed by Edward Larrabee Barnes, offers one of the finest settings for management education in the United States. The 140,000 square feet of space provides for the instruction of M.B.A. students in a variety of degree programs.

The building is constructed in two wings. One wing, primarily designed for M.B.A. education, includes six amphitheater-style classrooms, the 500-seat Harold S. Geneen Auditorium, a library completely devoted to management education, and numerous seminar and breakout rooms.

In May of 1989 the Fuqua School opened the 103,000 square foot R. David Thomas Center. Named after the founder of Wendy's International, Inc., the center has 111 guest rooms, three classrooms, a 250-seat dining room, and a 110-seat clubroom. The center was designed to be a comfortable and efficient facility to serve the Fuqua School's Executive Education and Executive M.B.A. students. The R. David Thomas Center is connected to the main Fuqua School building by a covered walkway.

## Resources of the University

**The Library System.** The libraries of the University consist of the Perkins Library system and three professional school libraries: the Fuqua School of Business Library, the Law Library and the Medical Center Library. The Perkins Library system includes the main library of the university, the William R. Perkins Library, and nine branches: Biology-Forestry, Chemistry, Divinity, the Lilly Library, Engineering, Music, Math-Physics, the Undergraduate Library, and the Pearse Memorial Library at the Duke Marine Laboratory in Beaufort. As of June 1990, Duke libraries contained approximately 4,000,000 volumes and ranked nineteenth in size among academic libraries in the United States. More than 30,000 serials, and 220 newspapers are received regularly. The collection includes more than 9,000,000 manuscripts, 110,000 maps, and 1,280,000 microforms.

**The William R. Perkins Library.** The William R. Perkins Library—the main library of the university—houses most of the books and journals in the humanities and social sciences, large files of United States federal and state documents, public documents of many European and Latin American countries, publications of European academies and learned societies, and special collections from South Asian, Far Eastern, and Slavic countries. The manuscript collection of approximately nine million items is particularly strong in all phases of life in the South Atlantic region. It also includes significant papers in English and American literature. The rare books collection contains materials covering a broad range of fields, and the Latin and Greek manuscripts constitute one of the outstanding collections in the United States. The collection of Confederate imprints is the largest in the country.

Tours of the Perkins Library are given frequently during orientation week and upon request throughout the year. Handbooks about library services and facilities are also available in each of the libraries.

**The Fuqua School of Business Library.** The Fuqua library houses the principal business collections for the university, and includes books, journals, reports, videotapes, working papers, and data bases in accounting, entrepreneurship, finance, human resources management, industry studies, information science, international business, managerial economics, marketing, organizational behavior, and operations management. The library's collections are tailored to the needs of the students and faculty of the

Fuqua School and recent acquisitions include important business issues in the curriculum, such as diversity, business in the environment, global business management, health services management, reengineering, and total quality management. As of June 1994, the library houses 20,000 volumes of books, 1,800 current periodical subscriptions, 330,000 microforms, and a comprehensive business reference collection. The library also houses several special collections, including annual and 10K reports on microfiche, computer software, and career services materials.

Faculty and students access more than a dozen databases in the library's database room. These databases include ABI/Inform; Bank Annual File; Business Periodicals on Disc; Compact disclosure: Compustat S&P PC Plus; Datastream; Dialog; General Business File; Global Vantage; Lexis-Nexis; Moody's International Company Data; Morningstar Mutual Funds; NTDB; *New York Times* Full-Text; the *Wall Street Journal* Full-Text; *Washington Post* Full-Text; and Worldscope Global and Emerging Markets. These databases contain information on companies, industries, and other topics of interest to business students and faculty. Many of these databases are networked throughout the building.

FSB librarians search all major computerized databases, such as Dow-Jones News/Retrieval and over 200 databases on the Dialog and Lexis-Nexis systems, which cover the spectrum of business research. The library's on-line catalog locates books in all Duke libraries, as well as in the libraries at neighboring universities. In addition, the library has on-line access to other computer systems that locate books and journals in other libraries, and obtains these materials on loan for Fuqua faculty and students.

Library services also include a journal contents alerting service for faculty and library instruction for faculty and students. To assist M.B.A. and WEMBA students, librarians staff the reference desk Sunday through Friday.

During orientation week, tours that cover the library's collections and services are offered to students. Information about the Fuqua School of Business Library may also be obtained from library staff. In addition, brochures and bibliographies describing the library's collections and services are available at the circulation desk.

**Computing Resources for Students.** Each full-time student at Fuqua is required to have access to a computer with a modem, in order to connect regularly to the school's systems from off campus. This means that you must have PC access at your residence in the local area either by owning, leasing, or sharing a computer. If you have specific questions regarding off-campus computer access, please contact Fuqua's Computer Center.

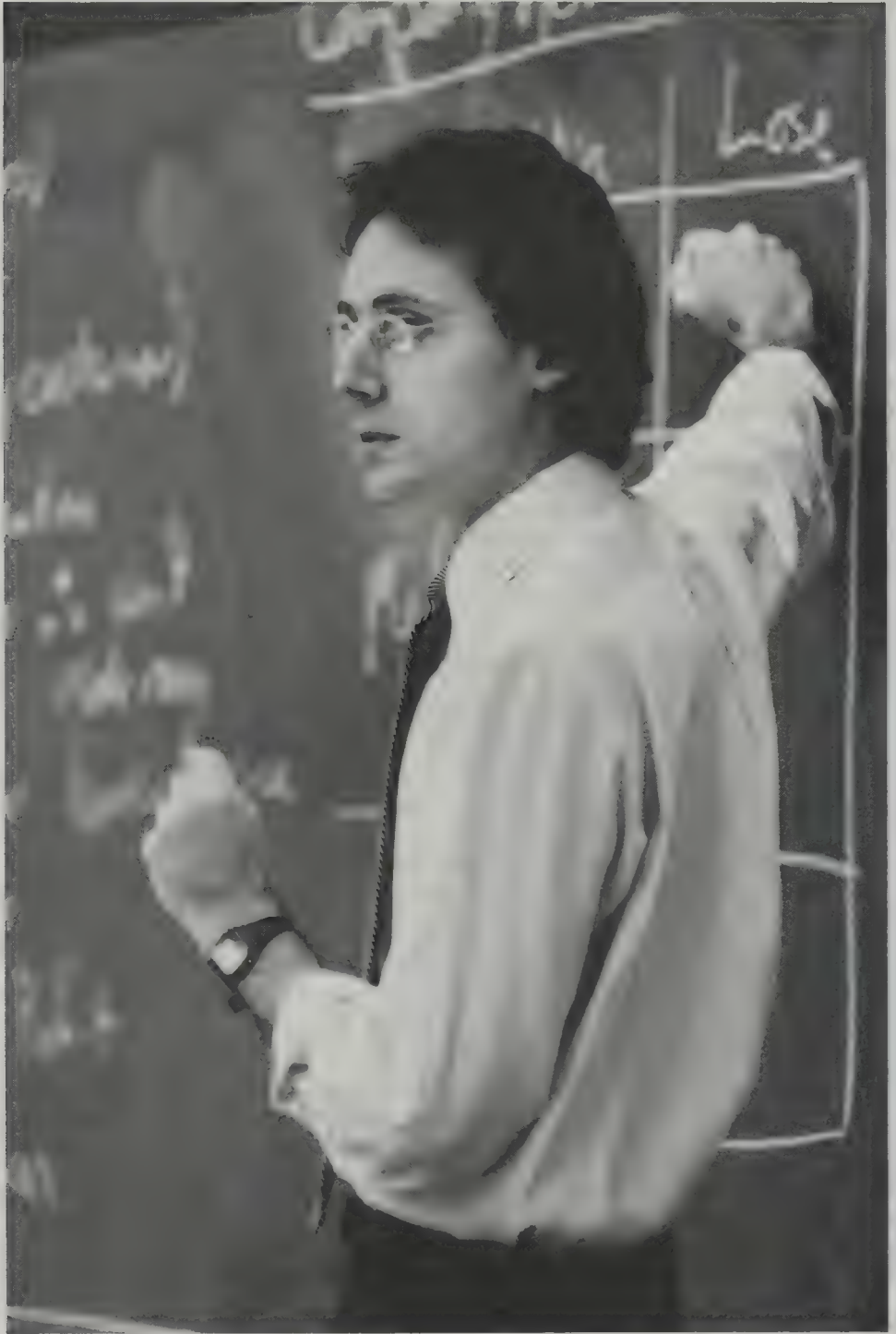
The Fuqua School's Computer Center manages all instructional, research, and administrative computing in the school. Close to 90 microcomputers dedicated to student use are located in two laboratories and every team study room. All MBA computers are connected to the school's local area network over which a wide variety of software is delivered. Each PC has a direct connection to a laser printer. The school's classrooms and auditoria are all equipped with a PC and projection equipment to facilitate computer-based demonstrations in classes.

Fuqua recently expanded its core computing services by integrating new, Internet-based personal communications services in support of its instructional programs. These services are collectively referred to as the Computer Mediated Learning Environment, or CMLE. The CMLE consists of Internet-based client-server applications that are universally accessible from all student computers at the Fuqua School. All of these services are also available from students' home computers via modem communications.

Overall, the Fuqua School's computing facilities provide an impressive wealth of resources to the school. More importantly, the nationally recognized Computer Center fosters a dynamic computing environment characterized by ongoing efforts to expand and improve the computing resources available to students and faculty.



## Programs of Study



## **The Master of Business Administration Programs**

The M.B.A. Program at the Fuqua School of Business prepares individuals for challenging management careers. The program emphasizes the understanding and application of analytical tools and concepts drawn from a broad array of management fields of inquiry. Students are asked to structure unstructured situations and to propose solutions to complex problems. By studying analytical tools, theories, and examples, students learn to identify the common threads in seemingly different business situations and to grasp the essential nature of unfamiliar management problems.

The faculty uses a variety of teaching styles. In some courses, lectures are used. In others, the case method predominates. In still others, there is a mix of many styles, including role playing and student presentations. Depending on the course, the work done outside of class is likely to consist of (1) reading texts or articles, (2) working problem sets, (3) researching and writing papers, or (4) preparing cases and discussing them in small study groups.

The school has made a deep commitment to the use of the personal computer in business education. Students are required to master word processing, spread-sheet programs, and some statistical packages on microcomputers. A number of courses require the use of these rapidly developing managerial skills. Likewise, the school is also committed to improving the communication skills of its students. The business communication curriculum does not stand by itself, but has been carefully integrated into other course work.

In academic year 1992-93, the Fuqua School launched a radically altered curriculum. This was done in response to nearly a decade of serious questioning of American graduate management education. Prior to designing this new curriculum the school spent a year in close consultation with its partners (corporations, alumni, students, and faculty) to determine what a modern graduate program should contain. To date this new curriculum has been a huge success, placing the Fuqua School squarely in a leadership position in graduate management education. The Fuqua curriculum is described in detail in the section below.

The Fuqua School of Business is accredited by the American Assembly of Collegiate Schools of Business and is a member of the Graduate Management Admission Council.

### **OUTLINE OF THE CURRICULUM**

The M.B.A. degree requires four semesters, divided into a total of eight terms, of full-time academic work totaling at least 85 units of graduate course credit. Students who are proficient in a particular subject may be allowed to substitute advanced course work for one or more core courses. There are no summer sessions for students in the M.B.A. program.

Modern management often requires analytical reasoning which focuses on precise statements of relationships between variables. In contemplating the future, concepts of

probability become especially important. For these and other reasons much of the course work assumes a firm grasp of mathematical concepts. Applicants are strongly encouraged to come prepared with the necessary background. A working knowledge of calculus is essential. Evidence of this preparation is required for admission.

**Integrative Learning Experiences.** The Integrative Learning Experiences (ILEs) are designed to address areas of the curriculum that are difficult to present in a traditional classroom setting and are better addressed via nontraditional and multiple formats. The four ILEs are organized to reflect the stages of a student's development as he or she progresses through the program. The first ILE creates a sense of community among the students that is vital to the teamwork required by later course assignments. After students have taken three terms of classes, the second ILE provides a format in which they integrate all of the material from their core coursework in a competitive business strategy simulation. As students begin the second year, the third ILE focuses on competitive advantage through people and processes. While students prepare to rejoin the business world, they examine an actual complex management issue in the fourth ILE that has the potential to shape the course of business over the next decade. This ILE requires them to review the strategic issues confronting all functions of the firm. The Integrative Learning Experiences form one of the most exciting and innovative components of the Fuqua School's curriculum.

## **THE FIRST YEAR**

Course work in the first year is designed to provide the basic knowledge and tools of analysis for the operation of business organizations and to introduce the student to the functional areas of the firm. The first-year program includes:

### **TYPICAL FIRST-YEAR SCHEDULE**

#### **SEMESTER 1**

##### **BA 390. ILE: Team Building and Leadership Development**

###### **Term 1**

- BA 300. Managerial Economics
- BA 311. Probability and Statistics
- BA 320. Managerial Effectiveness
- BA 395. Individual Effectiveness

###### **Term 2**

- BA 301. Economic Environment of the Firm
- BA 312. Decision Models
- BA 340. Financial Accounting
- BA 396. Individual Effectiveness

#### **SEMESTER 2**

###### **Term 3**

- BA 350. Financial Management
- BA 360. Marketing Management
- BA 370. Operations Management
- BA 397. Individual Effectiveness

##### **BA 391. ILE: Competitive Business Strategy**

###### **Term 4**

- BA 341. Managerial Accounting
- Elective
- Elective
- BA 398. Individual Effectiveness



## THE SECOND YEAR

During the second year of the program, students may choose from a wide variety of electives. The school does not require formal concentrations, so students are free to choose electives either focusing on a particular functional area or develop a program that emphasizes breadth of general management skills. The program's flexibility allows students to tailor the curriculum to meet their individual educational and career goals.

Within the elective offerings each Fuqua student must choose a minimum of two courses from a set which are identified as being international in character. This provides Fuqua students with the perspective to work effectively in today's global business environment.

Students may take either eleven or twelve electives during the second year. The typical course load in the second year is three courses per term; however, students may elect to take one less elective during one term of the second year to accommodate the heavy recruiting schedules which are part of the job search. Combining these second-year electives with the two electives taken in the first year, the program offers a total of thirteen or fourteen elective courses.

Also attractive to second-year students is the opportunity to take up to four courses in other schools or departments at Duke University, such as the School of Law, the School of the Environment, the Institute of Policy Sciences and Public Affairs, and the Department of Economics of the Graduate School. With approval, two of the four outside courses may be at the undergraduate level, for example, an undergraduate foreign language course.

### TYPICAL SECOND-YEAR SCHEDULE

#### SEMESTER 3

##### BA 392. ILE: Competitive Advantage through People and Processes

###### Term 5

Elective  
Elective  
Elective

###### Term 6

Elective  
Elective  
Elective

#### SEMESTER 4

##### BA 393. ILE: Complex Management Problems

###### Term 7

Elective  
Elective  
Elective

###### Term 8

Elective  
Elective  
Elective

## M.B.A. with an Accounting Concentration

Thanks to extensive financial support from the major public accounting firms, the Fuqua School of Business offers an M.B.A. degree with a concentration in accounting. Although Fuqua School students are not required to designate a major as part of the completion of the M.B.A. degree, those interested in professional careers in accounting may choose to concentrate in this area. Students who elect to pursue the concentration

in accounting usually do so with the intent of entering the accounting profession and taking the CPA exam immediately after the completion of their degree. Certified Public Accountants are licensed by individual states, all of which use the Uniform CPA Examination. This entry level examination necessitates that students take a specified curriculum in order to be adequately prepared. Additional course requirements may be imposed by specified states for licensing in addition to those courses in the accounting concentration. Students enrolling in the program should determine the particular licensing requirements of the individual states in which they are interested in residing.

## **M.B.A. with a Health Services Management Concentration**

The Health Services Management concentration provides students with the opportunity to develop particular skills and knowledge about the management of health organizations, including hospitals. M.B.A. students who intend to enter or have a strong interest in health care management are invited to pursue the M.B.A. with a health services management concentration.

In the first year, the M.B.A./H.S.M. student takes the M.B.A. core curriculum. In addition, a seminar on health services management is given. The seminar involves discussions with numerous health care managers and examines current health care issues. Between the first and second years, the M.B.A./H.S.M. students may do an internship in a health services organization. In the second year, the M.B.A./H.S.M. students are required to take courses in health care policy, managing the professional



service organization, and the strategic management for health sciences. In addition, two of the following electives are required: Human Resource Management, Operations Management in the Service Sector, Marketing of Services, Quality Control, or Accounting for Service Organizations. M.B.A./H.S.M. students have the opportunity to take numerous nonspecified electives as well. Also, M.B.A./H.S.M. students take a second-year health services management seminar.

The M.B.A./H.S.M. graduate is especially prepared to pursue a managerial career in health management in hospitals, health care systems, and a number of health care related industries. To obtain the H.S.M. concentration designation, students must complete all course requirements outlined above and successfully complete two of the following: first-year health care management seminar, the summer internship, and one second-year health care management seminar. The concentration is accredited by the Accrediting Commission on Education for Health Services Administration.

## The Doctor of Philosophy Program

The Ph.D. in Business Administration Program prepares candidates for research and teaching careers at leading educational institutions and for careers in business and governmental organizations where advanced research and analytical capabilities are required. The Ph.D. program places major emphasis on independent inquiry, on the development of competence in research methodology, and on the communication of research results. Students are introduced at the outset of the program not only to rigorous course work, but also to the research activities of the faculty and of other students. (A ratio of doctoral students-in-residence to faculty of less than one to one facilitates this opportunity to work closely with faculty.)

The program requires that doctoral candidates must acquire expertise in their chosen area of study and in research methodology. This competence may be gained from course work, participation in seminars, and independent study. Each student takes a comprehensive exam at the end of the second year or the beginning of the third year of residence. The final requirement is the presentation of a dissertation. The Ph.D. program usually requires four to five years of work. The student and his/her faculty committee determine the specific program of study.

## Special Programs

### CONCURRENT DEGREE PROGRAMS

In the spirit of interdisciplinary cooperation, the Fuqua School offers several joint degree programs in conjunction with other graduate and professional programs at Duke University. These options for study are available through the Graduate School, the School of Engineering, the School of Law, the Terry Sanford Institute of Public Policy, and the School of the Environment.

Concurrent degree programs offer the advantage of earning two degrees in less time than would be required to earn the two separately. In each of these programs, students must satisfy the degree requirements of both programs.

**The M.B.A.-J.D.** The concurrent M.B.A.-J.D. program requires four academic years of study with a full year in each school and two years of combined study that meets the requirements for both the M.B.A. and J.D. degrees. Students must apply for admission and be accepted by both the School of Law and the Fuqua School of Business. Additional information on the program may be obtained from the Director of Admissions, the Fuqua School of Business, Duke University, and the Admissions Office, Duke University School of Law.

**The M.B.A.-M.F. and the M.B.A.-M.E.M.** The concurrent M.B.A. and Master of Forestry or Master of Environmental Management degrees normally require three years of study. Students must apply for admission and be accepted by both the School of the



Environment and the Fuqua School of Business. Additional information on the program may be obtained from the director of admissions, the Fuqua School of Business, Duke University, and the Director of Admissions, Duke University School of the Environment.

**The M.B.A.-A.M. in Public Policy Sciences.** The concurrent M.B.A. degree and Master of Arts degree in Public Policy Sciences normally requires two and a half to three years of study. The joint degree curriculum requires a minimum of thirty credits to be specified by the Institute of Policy Sciences and Public Affairs, and sixty-seven credits to be specified by the Fuqua School of Business. Students must apply to and be accepted by both the Fuqua School of Business of Duke University and the Graduate School of Duke University. Additional information may be obtained from the director of admissions, the Fuqua School of Business, Duke University, and the director of graduate studies, Institute of Policy Sciences and Public Affairs.

**Public Policy Option.** For those students interested in management careers in the public or not-for-profit sectors the Fuqua School of Business offers a public policy option. This option consists of a recommended set of M.B.A. elective courses to be taken in the Institute of Policy Sciences and Public Affairs. Students interested in pursuing this option must obtain the consent of the institute's faculty adviser of M.B.A. students and the consent of the M.B.A. program director.

**The M.B.A.-M.S. in Engineering.** The objective of the M.B.A.-M.S. in Engineering is to enable qualified students to acquire the expertise needed to assume leadership roles in the development and management of the complex technological and societal systems of the future. The program takes five semesters and, in most cases, an undergraduate degree in engineering is needed. Additional information about the Duke University School of Engineering and this program may be obtained by writing the Director, M.B.A.-M.S. Program, School of Engineering, Duke University, Durham, North Carolina 27706.

## COMBINED UNDERGRADUATE-PROFESSIONAL DEGREES

Also known as the "three-two" program, the combined undergraduate-professional degree program provides that the Bachelor of Science or Bachelor of Arts degree may be awarded to students who successfully complete three years in an approved curriculum in arts and sciences or engineering at Duke and also the first year of study for the Master of Business Administration. After two years at Duke and before transfer to the Fuqua School of Business, students may apply for the three-two program through their academic dean. To be eligible for the combined program a student must successfully complete all baccalaureate requirements (except eight elective courses) and be admitted to the business school. Upon satisfactory completion of the first two semesters in the Fuqua School of Business, the student will be awarded a baccalaureate degree. The M.B.A. degree is awarded upon completion of the second year of the program.

## WEEKEND EXECUTIVE M.B.A. PROGRAM

The Fuqua School of Business offers a Weekend Executive M.B.A. Program for fully-employed business executives who wish to complete an M.B.A. degree without career interruption. It offers mid- to high-level managers a general management education, and includes the tools, concepts, and strategies required for senior leadership.

Fuqua also offers a Weekend Executive M.B.A. program in Health Services Management (HSM). Participants in this program will be fully integrated into the General Management Program, but then will take a number of courses specifically geared to their needs. Graduates will earn an M.B.A. as well as a certificate in HSM.

The Weekend Executive M.B.A. Program meets Friday-Saturday every other weekend. Applicants must have a minimum of five years of professional experience, be in a managerial position, and have corporate support. The program requires twenty months

of study and includes five semesters of course work. Students interested in the program should contact the Executive M.B.A. Program Office, Fuqua School of Business, Duke University, (919)660-7804.

## **EXECUTIVE EDUCATION**

In addition to traditional M.B.A. degree programs, the Fuqua School offers an extensive array of nondegree executive education programs based on the recognition that education is a life-long process requiring continual renewal. Now serving approximately 3,500 executives a year, the 11 different types of open enrollment and over 40 tailored, company-specific programs, totaling over 89 program weeks, allow for business leaders worldwide to benefit from the quality of education that the Fuqua School offers. The interaction of faculty, administrators, and participants gives executives the opportunity to learn from the best in both academic and corporate sectors, while keeping the Fuqua School in touch with the present day concerns of business leaders.

One of the strongest symbols of the Fuqua School's commitment to executive education is the R. David Thomas Center. The Thomas Center is set into a wooded hillside at the western edge of the Duke campus. The secluded location together with the design of the buildings create an ideal environment for learning. The 103,000 square-foot facility features two 55-seat state-of-the-art classrooms, a 25-seat seminar room, two 20-seat boardrooms, 15 breakout rooms, full dining facilities, fitness center, and 111 sleeping rooms.

Among the major programs offered are the six-week Global Executive Program, conducting sessions in Asia, Europe, and the Americas. The four-week Advanced Management Program and the two-week Program for Manager Development are both offered three times each year. In addition to these superior general management courses, several one-week functional and specialty programs are offered, such as: Basic Financial Strategies for Decision Makers; Global Financial Management; Emerging Markets Management; and Competing in Telecommunications. New programs being offered in 1996 are: Creating Corporate Wealth through Mergers and Acquisitions; Marketing Leadership Program (one week in England, one week in Durham, NC); and Management Program for Physicians and Health Care Professionals.

Additionally, two programs have been designed specifically for managers from the former Soviet Union or newly independent states. One is offered in St. Petersburg, Russia, and the other here in Durham, NC.

Our worldwide recognition has been achieved through our tailored or custom designed programs, which are developed and delivered specifically for individual firms, meeting their precise development needs. Companies such as AT&T, Bethlehem Steel, Eli Lilly and Co., Ernst & Young, Ford Motor Co., Harnischfeger Ind., ITT, Johnson & Johnson, Lafarge Corp., Rank Organization, plc, and Wolesley, plc have gained strategic corporate advantage through participation in the executive education custom programs at Fuqua.

Further information may be obtained by contacting Dr. Blair H. Sheppard, Associate Dean and Director of Executive Education, the Fuqua School of Business, Duke University, R. David Thomas Center, Box 90116, Durham, NC 27708-0116, e-mail [pjm2@mail.duke.edu](mailto:pjm2@mail.duke.edu), telephone number 800 FSB-EXEC, or (919) 660-8011, fax (919) 681-7761.

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## *Admissions*





## Admissions

Anyone who holds a bachelor's degree from an accredited college or university, but does not already hold an M.B.A. degree, is eligible to apply for admission to the Fuqua School of Business. No specific undergraduate major is deemed preferable to any other; however, the programs are designed primarily for persons with training in the liberal arts, engineering, or the sciences. The Admissions Committee seeks those candidates with leadership potential who are prepared to compete successfully in a demanding course of study which requires logical and analytical reasoning. All entering students are expected to have a working knowledge of calculus, and applications are reviewed closely for this ability. Matriculants to the M.B.A. Program are expected to sign and abide by the Honor Code agreed upon by the students and faculty of the Fuqua School of Business.

The Admissions Committee considers full-time business or military experience to be a definite asset in the admissions process. Consequently, 98 percent of the most recent M.B.A. class entered Fuqua with full-time work experience.

**Application Information.** Complete instructions for filing an application are included with each application packet. Each applicant must submit the following to the Admissions Office before action can be taken:

1. **Application Form:** Careful completion of the application will ensure a thorough evaluation. Since it is desirable that the application be as complete as possible, additional sheets should be used if necessary.
2. **College Transcripts:** An official transcript from each of the colleges *attended* must be sent to the Admissions Office. Students who apply during their senior year must ensure that a final transcript be received by the business school prior to enrolling.
3. **Letters of Recommendation:** Three letters of recommendation are required and must be sent to the Admissions Office. Recent graduates or those in their senior year should have at least one letter submitted from persons familiar with their academic ability. Recommendations should be professional or academic, not personal.



4. Graduate Management Admission Test: Score reports must be sent directly from the Educational Testing Service to the Fuqua School of Business.
5. Application Fee: A nonrefundable fee of \$75 to cover processing must be submitted with the application.

Any questions or requests for application materials should be addressed to the Director of Admissions, The Fuqua School of Business, Duke University, Box 90104, Durham, North Carolina 27708-0104, telephone (919) 660-7705.

The Fuqua School uses a rolling decision process and applicants are encouraged to complete their applications as early as possible. In general, the processing and review time for completed applications is six to eight weeks. Those received after the final March 29 deadline will be considered on a space-available basis. Applications will be reviewed and candidates notified according to the following schedule:

| Completed application received: | Decision mailed by: |
|---------------------------------|---------------------|
| December 1, 1995                | January 31, 1996    |
| January 12, 1996                | March 12, 1996      |
| February 19, 1996               | April 19, 1996      |
| March 29, 1996                  | May 31, 1996        |

**Notification of Status.** When the applicant has been accepted, a letter of admission and an acceptance form will be sent. A nonrefundable tuition deposit of \$750 will be required to reserve a place in the class. The process of admission is not complete until the statement of acceptance and the tuition deposit have been returned to the Director of Admissions.

Applicants notified of acceptance prior to March 15 will be expected to make the \$750 tuition deposit by May 1. Applicants notified of acceptance after that date will be expected to make the tuition deposit within three weeks of the notification, or the place

in the entering class will be forfeited. It should be reiterated that the tuition deposit is in all cases nonrefundable.

**Graduate Management Admission Test.** The Graduate Management Admission Test, required of all applicants, is administered by the Educational Testing Service. Detailed information about the test and application forms may be obtained by writing directly to the Graduate Management Admission Test, Educational Testing Service, Box 6103, Princeton, New Jersey 08541-6103.

The examination is administered at many centers throughout the United States and abroad. Arrangements to take the test at an established center must be made four weeks before the test date (six weeks prior to test date at established foreign centers). The examination is given four times a year. Special centers may be arranged for persons distant from established centers. Requests for such accommodations must be made at least eight weeks prior to the selected test date. Applicants are encouraged to take the test in October or January; those taking the test in March or June run the risk of having the class already filled by the time scores are available.

**Admission of International Students.** Fully qualified students from outside the United States are welcome at the Fuqua School of Business. In applying for admission, the foreign student should submit, in addition to the above credentials, the following:

1. If the native language is not English, the results of the Test of English as a Foreign Language (TOEFL) must be submitted. Most successful applicants score approximately 600 or better on the TOEFL.
2. A statement certified by a responsible person that finances are sufficient to maintain the student during the stay at Duke University. Fuqua is pleased to be able to consider international applicants for scholarships. However, scholarship money is limited and will not be sufficient to cover tuition and living expenses. International students are not eligible for federal financial assistance (loans and work-study).

The M.B.A. program is a two-year program and all students are expected to complete the required coursework in the allotted time period. International applicants should be prepared to carry the normal course load as described earlier in the bulletin. For this reason, applicants whose native language is not English should consider the merits of enrolling in the Summer Institute in American Business, Communication, and Culture offered by the Fuqua School. Since the coursework in the program involves lectures, discussions, and group projects, a firm understanding of the language is required.



## *Financial Information*



## Tuition and Fees

The tuition for students in the Fuqua School for the year 1995-96 is \$10,900 per semester for daytime students and \$10,400 per term for weekend students (5 terms). All charges are due and payable at the times specified by the university and are subject to change without notice. An \$10 charge will be imposed for any student's check returned to the university unpaid.

After the beginning of classes, refunds will be made on a pro rata basis. Students may elect to have tuition charges refunded or carried forward as a credit for later study according to the following schedule:

1. Withdrawal before classes begin: full refund.
2. Withdrawal during the first or second week of classes: 80 percent.
3. Withdrawal during the third, fourth, or fifth week of classes: 60 percent.
4. Withdrawal during the sixth week: 20 percent.
5. Withdrawal after the sixth week: No refunds.

Tuition or other charges paid from grants or loans will be restored to those funds not refunded or carried forward.

**Payment of Accounts.** Following first enrollment in the Fuqua School, monthly invoices are sent to each student with outstanding charges by the bursar's office. As a part of the agreement of admission to Duke University a student is required to pay all

invoices as presented. A late payment charge will be assessed for all charges not paid in full by the late payment date, and certain restrictions may be applied.

**Late Payment Charge.** If the total amount due on the student's invoice is not received by the bursar by the invoice late payment date, a penalty charge will be accrued from the billing date of the invoice. The late payment charge is assessed at a rate of the 1/3 percent per month (16 percent per annum) applied to the amount outstanding.

**Debts.** An individual will be in default if the total amount due is not paid in full by the late payment date. A student in default will not be allowed to receive a transcript of academic records, have academic credits certified, or receive a diploma at graduation. No records are released until students have settled with the bursar for all indebtedness. Failure to pay all university charges on or before the times specified by the university will bar the student from class attendance until the account is settled in full. In addition, an individual in default may be subject to withdrawal from school.

**M.B.A. Association Student Activity Fee.** All students are assessed a nonrefundable fee to be used to support the activities of the M.B.A. Association.

**Athletic Tickets.** Athletic ticket books are available to graduate students. Purchase is optional, with payment due in the fall semester.

**Vehicle Fee.** Each student possessing or maintaining a motor vehicle at Duke University shall register it during the week of orientation or at posted times during the beginning of the academic year in the Bryan Center. A student who acquires a motor vehicle and maintains it at Duke University after academic registration must register it within five calendar days after operation on the campus begins. Resident students are required to pay an annual fee for each motor vehicle. The opportunity to register your vehicle will be available during orientation week.

At the time of registration of a motor vehicle the following documents must be presented: state vehicle registration certificate, valid driver's license, and a student identification card.

**Student Health Fee.** All students are assessed a nonrefundable fee for the Student Health Service.

**Student Accident and Sickness Insurance.** The university has made arrangements for a Student Accident and Sickness Insurance Plan to cover all full-time students for a twelve-month period. For an additional fee a student may obtain coverage for a spouse and children. **Although participation in this program is voluntary, the university requires all graduate students to be financially responsible for medical expenses above those covered by the University Student Health Program through the University Accident and Sickness Policy, a private policy, or personal financial resources.** Students who have equivalent medical insurance or wish to accept the financial responsibility for any medical expense may elect not to take the Duke plan by signing a statement to this effect. *Each full-time student in residence must purchase this student health insurance or indicate the alternative arrangement.* The Student Accident and Sickness Insurance Policy provides protection twenty-four hours per day during the full twelve-month term (August 17-August 17) of the policy for each student insured. Students are covered on and off campus, at home, while traveling between home and school, and during interim vacation periods. Coverage, services, and costs are subject to change each year as deemed necessary by the university. For information regarding coverage call (919) 684-6455.

**Restrictions.** Students are expected to meet academic requirements and financial obligations, as specified elsewhere in this bulletin, in order to remain in good standing. Certain nonacademic rules and regulations must be observed also. Failure to meet these requirements may result in dismissal by the appropriate officer of the university.



## ESTIMATED STUDENT BUDGET 1995-96

### Student Living Expenses

|   |         |
|---|---------|
| Rent (including utilities)  | \$3,450 |
| Food  | 3,190   |
| Miscellaneous: (local travel, phone, laundry, insurance, entertainment, personal maintenance, etc.) | 2, 940  |
| Total Living Expenses   | \$9,580 |

### Educational Expenses

|                            |          |
|----------------------------|----------|
| Tuition*                   | \$21,800 |
| Student Insurance*         | 656      |
| Student Health Fee*        | 400      |
| M.B.A. Association Fee     | 100      |
| Graduate Activity Fee      | 14       |
| Books and Supplies         | 1,200    |
| Total Educational Expenses | \$24,170 |

**Total Expenses for Academic Year** **\$33,750**

\*These charges are estimated and may change before the beginning of the academic year. The student insurance may be waived if you have other health insurance, but the student health fee is required.

The family health insurance currently costs \$1,942 and is expected to increase for 1995-96.

NOTE: The student health insurance and M.B.A. Association fees are **paid in full** during the fall semester. The tuition, student health fee, and graduate activity fee is paid one-half each semester.

## Financial Aid

The Fuqua School of Business endeavors to make it possible for qualified students to attend Duke even though their own resources may be insufficient. Financial aid is available in the form of fellowships and through various loan programs.

### SCHOLARSHIPS AND FELLOWSHIPS

Each year a number of merit-based fellowships are available to incoming students. The criteria for selection are prior academic achievement, demonstrated qualities of leadership, involvement in extracurricular activities and professional accomplishments. The awards are for two years of graduate study, ranging from partial tuition to full tuition. Requests for fellowships should be filed early in order to receive full consideration. The application form is provided in the admissions application booklet. Funding is limited and is awarded as applicants are admitted to the program. Students who enroll without a fellowship or scholarship award should not anticipate an award in their second year.

### NAMED SCHOLARSHIPS AND FELLOWSHIPS

#### First-Year Awards

Listed below are the named awards for first-year students who have already been awarded a Fuqua fellowship. Selection of recipients is made during the summer and no special application is required. The award replaces, but would not be less than, funds that have already been offered and do not provide additional scholarship aid to the recipient.

*A. F. Calabrese Scholarships.* John J. Mack, A.B. 1968, and a member of the school's Board of Visitors, established this endowed fund to honor A. F. Calabrese. The fund provides scholarships for students enrolled in the Fuqua School who participated in intercollegiate athletics. Preference is given to students who attended Duke or the Catholic University of America.

*Allied-Signal Fellowships.* These fellowships were established by Allied-Signal Foundation Inc. in order to provide support for outstanding students at the Fuqua School. The fellowships may be awarded to either first- or second-year students.

*CIGNA Fellowship.* Established by the CIGNA Corporation, this fellowship is awarded biennially to a qualified minority student. The fellowship is a two-year commitment of \$2,500 per year for the student chosen.

*First Chicago Minority Scholarship.* This \$5,000 scholarship is provided by First Chicago to an outstanding minority student. The recipient of this scholarship may be a first- or second-year student.

*Robert A. and Annie Lewis Garda Scholarship.* Robert A. Garda, B.S.E.E. 1961, chairman of the Fuqua School's Board of Visitors, and his wife Annie Lewis Garda, A.B. 1961, endowed this scholarship to provide major support to one outstanding student during his or her studies at the Fuqua School.

*P. Huber Hanes Scholarships.* Established in 1939, through the donation of P. Huber Hanes, these scholarships are given annually to Duke students admitted by the Fuqua School into the combined undergraduate-professional degree program.

*Junior Achievement Scholarship.* A grant from the Little Family Foundation annually supports two awards of \$5,000 each. These scholarships are given to students who have participated actively in a Junior Achievement Company and/or who have worked as an advisor to a Junior Achievement Company. Recipients also must have work experience.

*The J. Paul Sticht Endowed Scholarship.* Funded by RJR Nabisco Inc., these fellowships were endowed by the R. J. Reynolds Industries in honor of former Reynolds chairman J. Paul Sticht. The fellowship is awarded annually to a graduate of Mr. Sticht's alma mater, Grove City College.

*Unilever U.S. Scholarship.* Funded by Unilever U.S., this scholarship for \$7,500 per year is a two-year commitment for the student selected. Students with marketing backgrounds are considered.

*Philip Morris Scholarship.* Philip Morris USA established this scholarship to provide tuition support to a minority student with career interest in plant operations.

*Bristol-Meyers Squibb Scholarship.* This scholarship was established by the Bristol-Myers Squibb Foundation to support a minority student at the Fuqua School who has expressed an interest in a finance career.

*Health Services Management Scholarships.* The following scholarships are for Fuqua students in the health services management concentration: Ray Brown Scholarship; Marshall I. and Sarah W. Pickens Scholarship; ServiceMaster Scholarship; Thomas Frist Scholarship; Alumni Scholarship; and the Alumni Need Scholarship. Selection of recipients is made by the Fuqua School financial aid committee and no special application is required.

*Sharon and Garry Snook Scholarship.* Established to provide tuition support for an entering American Indian student. This support is a two-year commitment.

## **Second-Year Named Awards**

Listed below are the named awards reserved for students who are already receiving Fuqua fellowships/scholarships and have distinguished themselves with high academic achievement and community involvement during their first year of study. Selection of recipients is made during the summer and no special application is required. With the exception of the Class of 1987 and 1988 scholarships, these named awards

replace, but would not be less than, the Fuqua fellowship received and do not provide additional scholarship support to the recipient.

*Accounting Associates Fellowships.* These fellowships were established through the donation of the Accounting Associates, a partnership of Duke University accounting professors. These awards are given annually to M.B.A. students pursuing an interest in accounting.

*David S. and Susan Bagwell Endowment.* David S. Bagwell, Class of 1973, established this endowment to provide support for a Fuqua student with high academic achievement.

*Martin L. Black Fellowships.* These fellowships were established by the gifts and donations of alumni and friends of the late Martin L. Black, professor emeritus, and a faculty member in accounting at Duke for over forty years. The awards are given to students planning to concentrate in accounting.

*Leo Burnett Scholarship.* Awarded to a student showing exceptional talent and ability in marketing and/or advertising, this scholarship also is awarded on the basis of financial need.

*North Carolina Treasury Management Association Scholarship.* This scholarship is awarded annually to a student from North or South Carolina or Virginia who has excelled academically and is oriented towards a career in finance. The gift is made possible through an endowment from the Carolinas Cash Management Association.

*The Chase Manhattan Scholarship.* Endowed by the Chase Manhattan Bank, this fund provides support to Fuqua students who have proven records of excellence.

*Class of 1987 Scholarship.* This scholarship was established by the Class of 1987 to provide support for a second-year student who did not receive scholarship aid in the first year; who is active in school and /or extracurricular activities and has achieved high academic standing.

*Class of 1988 Scholarship.* This scholarship was established by the Class of 1988 to provide support for a second-year student who did not receive scholarship aid in the first year; who is active in school and /or extracurricular activities and has achieved high academic standing.

*Class of 1990s Non-Profit and Small Business Internship Award.* This award was established as a class gift by the Class of 1990 to provide support for students who choose summer internships with nonprofit/public organizations or small- to medium-sized businesses. The award is selected by an advisory board and is prioritized by non-profit, public organizations, and small- to medium-sized businesses.

*The Julian Connally Scholarship Fund.* This fund was established by Julian U. Connally, Class of 1930, to provide support for students enrolled in the Fuqua School of Business.

*Walter Albert and Bertha Barefoot Corbett Memorial Scholarship.* W. Horace Corbett, Class of 1938, and his wife, Valera Murray Corbett, established this scholarship in honor of Mr. Corbett's parents.

*The Martin F. C. Emmett/Tambrands Endowment Fund.* This scholarship fund was established by the Tambrands Inc. and Martin F. C. Emmett to provide financial assistance to Fuqua students who have achieved high academic standing.

*James R. Felts Memorial Scholarship.* This scholarship was established by family, friends, and colleagues in memory of Mr. Felts, who was an honorary alumnus of the Health Administration Program. It provides support to Fuqua students in the health services management concentration.

*Charles H. Frenzel Scholarship.* Named for a former faculty member in the Health Administration Program, this scholarship was funded by the McLeod Regional Medical Center where Dr. Frenzel ended his career. This scholarship provides support for a student concentrating in health services management.

*Friends of Fuqua Scholarship.* This scholarship was established by an anonymous donor to provide support to Fuqua students based on academic standing.



*James G. Hanes Memorial Scholarship Fund.* This scholarship was established by the James G. Hanes Memorial Fund/Foundation to provide support for Fuqua students with high academic achievement.

*Vivian Edward Hollinshed Scholarship.* This scholarship was endowed by Clara K. Hollinshed in honor of her husband. Preference is given to students who have resided in the southeastern region of the United States for at least five years.

*Edward A. Horrigan, Jr. Business Scholarship.* Edward A. Horrigan, Jr., a former member of Fuqua's Board of Visitors, endowed this fund to provide scholarship support for an American-born U.S. citizen who is largely dependent upon financial aid for the cost of his or her education.

*Richard and Mamie Howerton Scholarship.* This scholarship was established by Thomas R. Howerton, Duke class of '43 and M.H.A. '48, to honor his parents, Richard and Mamie Howerton. It provides support to Fuqua students in the health services management concentration.

*Thomas Crafton Keller Memorial Fund.* This was established by Thomas F. Keller in memory of his son, Thomas Crafton Keller, and supports Fuqua students with high academic achievement.

*William A. and Anne L. Klopman Scholarships.* This endowment fund was established by a donation from William A. and Anne L. Klopman, parents of three Fuqua graduates. Mr. Klopman is retired chairman of Burlington Industries.

*Mead Scholarships.* Established by the donation of D. Richard Mead, Jr., A.B. 1952, these scholarships are given to students who, without such support, might otherwise not be able to afford graduate study.

*James H. Moshivitis Endowment Fund.* This scholarship was established by James H. Moshivitis to provide financial support to Fuqua students who have achieved high academic standing.

*Howard C. Ris Scholarships.* This scholarship is awarded to a Fuqua student who has demonstrated outstanding ability and potential. This endowed scholarship is made possible by a gift from Howard C. Ris, A.B. 1938, retired chairman of Ris Paper Company, Inc.

*John W. Rollins Scholarship.* This scholarship/loan award is given annually to selected students. Rollins Scholars possess outstanding leadership qualities and strong records of academic achievement. This award was established by John W. Rollins, Sr., chairman and chief executive officer of RLC Corporation.

*The Ann Williams Vander Weide Endowment Fund.* This endowed fund was established by James Vander Weide, research professor at the Fuqua School, in honor of his late wife. This scholarship provides support to Fuqua students who have demonstrated high academic achievement.

*Herman and Johanna Vander Weide Scholarships.* This endowed fund was established by James H. Vander Weide, research professor at the Fuqua School of Business, in honor of his parents.

**Financial Aid Application Process.** Financial aid award decisions for entering students are made after admissions to the program is offered, with the first awards being made in January for the class beginning in August of that year. All students applying for financial assistance (scholarships, fellowships, loans, or work) must complete the M.B.A. financial aid form in the admissions application.

## STUDENT LOAN PROGRAMS

The Fuqua School participates in long-term student loan programs and the Federal College Work-Study Program. These programs are available to students who demonstrate need according to federal guidelines. Students applying for loans and work-study must complete the "Free Application for Federal Student Aid" (FAFSA). To obtain a FAFSA form call 1-800-433-3243. A new FAFSA form must be completed each academic year.

*Federal Stafford Student Loan Program.* (A) Subsidized Loan Program: (Need-Based). This federally subsidized low interest loan enables graduate students who qualify on the basis of need to borrow up to \$8,500 per academic year, with aggregate limit (undergraduate and graduate combined) of \$65,000 per student. These funds may be borrowed from local banks, credit unions, savings and loans, and other participating lenders. For loans made to new borrowers the interest rate is an annual variable rate (not to exceed 8.25 percent) based on 91-Day T-Bills plus 3.10 percent and set annually in July. The effective rate through 06/30/95 is 7.43 percent. Repayment begins six months after graduation or termination of enrollment. The loans are disbursed one-half each semester, and a 3 percent loan origination fee and a 1 percent guarantee fee is deducted from each disbursement of the loan. The minimum payment per month during repayment is \$50, and the maximum repayment period is ten (10) years.

(B) Unsubsidized Loan Program: (Non Need-Based). The unsubsidized Federal Stafford Student Loan has the same terms and conditions as the subsidized program, but the student is responsible for interest that accrues while he/she is in school. A student may receive both subsidized and unsubsidized Federal Stafford Loans not to exceed the applicable Stafford loan limit of \$18,500. A 3 percent loan origination fee and a 1 percent guarantee fee will be deducted from each disbursement of the loan.

*Federal Perkins Student Loan Program (Need-Based).* This campus-based federal student loan program is administered by the institution with no interest charged while you are enrolled full-time. The annual loan limit provides for loans up to \$5,000 per academic year with aggregate limit (undergraduate and graduate combined) of \$30,000 per student. The interest rate is 5 percent and begins to accrue nine months after graduation or termination of enrollment. Limited funding is allocated to the Fuqua School for this program, and the amount awarded to individual students by the Fuqua School will depend on individual financial need and available funding. A separate application is not required to be considered for the Perkins loan, and no origination or insurance fees are charged. A promissory note and disclosure form must be signed for this loan, and it will be sent to you during the summer or will be available after you arrive on campus. Perkins loan awards are contingent on adequate federal funding being received. Should funding not be adequate, the Fuqua School will attempt to replace awards with alternate sources.

**Other loans not determined by federal guidelines for those who wish to supplement or replace personal resources.**

*GradSHARE.* These educational loans through the Nellie Mae Education Loan Program offers graduate and professional students a signature loan based on projected future earnings, rather than on current income and credit worthiness. Annual loan amounts range from \$2,000 to \$7,500 when a student borrows on his/her own, or up to \$20,000 annually with a cosigner. Borrowers can choose between two interest rate options (a monthly variable rate, not to exceed the prime rate plus 2 percent, or a one-year renewable rate, not to exceed the prime rate plus 3 to 4 percent), and have three repayment options: (1) deferred principal and interest payments while enrolled; (2) deferred principal payments while enrolled; (3) fixed monthly payments of principal and interest. Repayment periods range from four to twenty years, depending on the amount borrowed. A 2 percent interest fee will be assessed when repayment begins. There is a 7 percent guarantee fee. Your cumulative loan debt for all loans may not exceed \$65,000. For more information contact Nellie Mae, 50 Braintree Hill Park, Braintree, MA 02184 (1-800-634-9308).

*M.B.A. Loans Tuition Loan Program (TLP).* This is a private loan made available to business school students by the HEMAR Insurance Corporation of America and Northwest Bank South Dakota N.A. Maximum loan limit is costs of education less other aid each academic year. In school interest is variable, adjusted quarterly and is currently the

average 91-day treasury bill, plus 3.25 percent. At repayment (six months after graduation), interest rate is variable and adjusted quarterly not to exceed 91-day T-bills, plus 3.4 percent. In school interest may be deferred until six months after graduation. Deferred interest is capitalized and added to principle once at the time repayment begins. There is an insurance premium which is deducted from loan checks. This premium is 7.5 percent at disbursement and an additional amount of 2.5 percent at repayment for loans which are not cosigned. For more information contact MBA Loans Processing Center, P.O. Box 64722, St. Paul, MN 55164, 1-800-366-6227.

*MBA Assist Loan.* This private alternative loan is being offered by CITIBANK through a program called CitiMBA Loan program. The annual loan limit is \$15,000 per year and the minimum loan amount is \$500. While in school, the variable quarterly interest is based on the 91-day T-Bills plus 3.25 percent. An insurance fee of 8.50 percent will be deducted from the loan at disbursement. Students may borrow this fee in the loan amount. Repayment begins six months after graduation with a maximum repayment period of fifteen years. Variable quarterly interest during repayment is based on the 91-day T-Bills plus 4.25 percent. International students, with a credit worthy U.S. citizen or permanent resident as a co-borrower, may be eligible. The cumulative educational debt, including MBA Assist and all other outstanding loans, may not exceed \$100,000. For additional information and application call Citibank Graduate Services, 1-800-967-8677.

### **Student Work Program**

*College Work-Study Program.* The College Work-Study Program is federally funded and supports the employment of students while they are in school. Students must meet federal need eligibility standards to qualify for participation and students work an average of six to eight hours per week. With work-study, a student's salary is paid jointly by the federal work study program and the Fuqua School. Students given work-study allocations are responsible for securing their own employment within the school, which offers a variety of employment opportunities for interested students. A job board is available in the M.B.A. program office area to assist in locating employment. Fuqua students average working six to eight hours per week and are paid by the hour bi-weekly for the hours worked. The hourly rate for 1995-96 is \$6.50.





## *Career Services and Placement*



## Career Services and Placement

The Career Services and Placement Office recognizes that students enter the Fuqua School of Business with diverse career interests and various levels of job search and career planning skills. Therefore, services are designed to meet a wide range of interests and needs.

The Career Services and Placement Office initiates a comprehensive career planning program early in the first year of study beginning with self-assessment, then career exploration, and finally instruction and refinement of a range of job search skills. The methods used to deliver these services include individual advising sessions, classroom instruction through the IE program, small group workshops, and seminars featuring corporate recruiters and alumni.

Early in the first term, students embark on a self-assessment of their skills, accomplishments, work styles, interests, and goals. Students are encouraged to revisit their self-assessment inventory throughout their two years of study. This knowledge forms the basis for developing a resume, cover letters, and interview themes. In addition, it helps the student identify areas for career exploration.

The Career Services and Placement Office provides many means for career exploration. In addition to a library of career books, articles, and audio-visual tapes, the office facilitates on-campus interaction between students and employers. The annual Job Fair attracts a wide range of businesses to Fuqua's campus early in the fall. This all day event, open only to Fuqua students, provides an excellent opportunity for students and employers to get acquainted and discuss job responsibilities and career paths in an informal atmosphere. Throughout the fall and winter, firms visit Fuqua each evening to host Special Interest Programs (SIPS) where employers and students discuss the company and career opportunities in more depth. Most SIPS open with prepared remarks on an audio-visual presentation by several company representatives, followed by a question and answer period where students and employers mingle in a social setting. The various clubs bring alumni to campus to present workshops on what it is really like to work in various career areas (i.e., investment banking, product marketing, or consulting).



The Career Services and Placement Office staff is committed to preparing all students to face the challenges of a job search. The development of a solid set of job search skills and strategies is critical to successful long-term career management. The office works closely with each student to develop a resume that highlights each student's unique background and skills. Resume guidance begins with classroom instruction followed by individual critiques with the professional staff. After completion of the resume, the Career Services and Placement Office and the Management Communication Center provide classroom instruction and individual guidance on writing persuasive job search correspondence to accompany the resume.

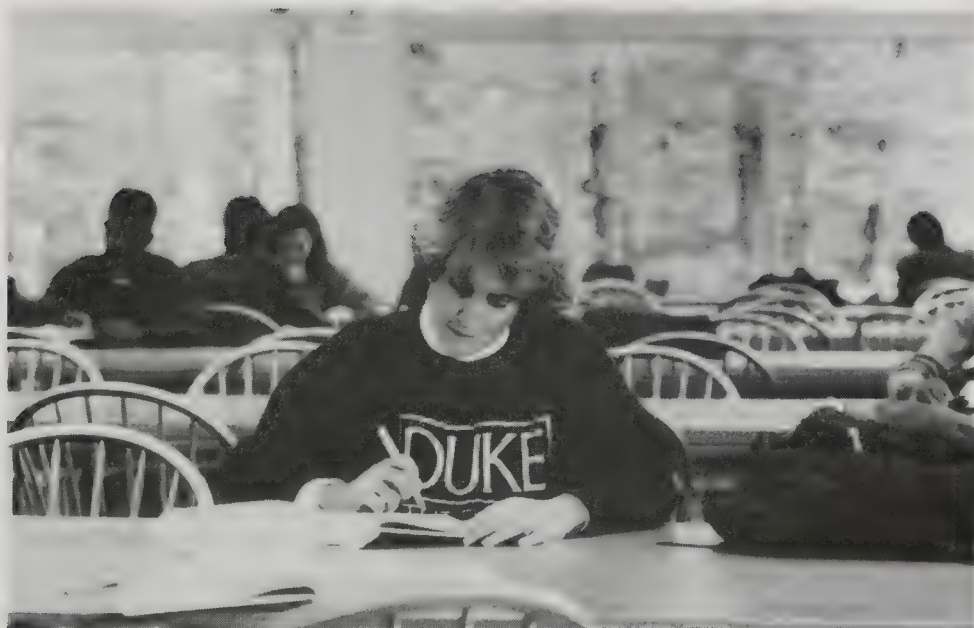
Focus then shifts to developing excellent interview skills. Training begins with classroom instruction on how to interview effectively, and then students participate in a Mock Interview Program. This video-taped interview provides students an opportunity to experience a realistic interview for a particular position of interest to them. Students then receive constructive feedback while reviewing the tape with a member of the office's professional staff. The Mock Interview Program is supplemented by a library of video-taped mock interviews conducted and critiqued by employers.

The Career Services and Placement Office helps students secure summer and permanent employment by managing an active on-campus interview program, publishing employer job opportunity notices, and by advising students on individual job search strategies.

In addition, Fuqua is involved in two major recruiting consortiums with other top tier business schools. The West Coast Recruiting Consortium, held annually in California, is aimed at helping our students secure jobs with employers who traditionally do not interview on campus. The International Recruiting Consortium is hosted by Fuqua and attracts major global companies to campus to interview for international positions.

The comprehensive career planning program is designed to teach students job search and career planning skills that they will use not only to secure their first jobs after business school but throughout their career. In addition, Fuqua alumni may continue to use the resources of the Career Services and Placement Office at anytime in their career.





## 1994-1995 Campus Recruiters and Other Hiring Organizations

A.T. Kearney, Inc.  
 ABN-AMRO Bank  
 Accent Marketing Services, Inc.  
 Adler Coleman  
 Advo, Inc.  
 AHS/Sunbelt  
 Aladdin Industries  
 The Alexander Group Inc.  
 AlliedSignal Inc.  
 Amerada Hess Corporation  
 America West Airlines  
 American Airlines Inc.  
 American Express Company  
 American Express Travel Related Services Co.  
 American International Group Inc.  
 American Management Systems, Inc.  
 Amgen, Inc.  
 Andersen Consulting  
 Annin & Co.  
 APS Inc.  
 Arthur Andersen & Co. Health Care Consulting  
 Arthur Andersen & Co. Management Consulting  
 Arthur D. Little, Inc.  
 Ashland, Inc.  
 AT&T  
 Atlas Air  
 Bahlsen Inc.  
 Bain and Company, Inc.  
 Banc One  
 Banco Santander  
 Bank of America  
 Bank of New York  
 Bantam Doubleday Dell

Barclays deZoeete Wedd  
 Barra Inc.  
 Baxter Health Care Biotech Group  
 Bay Networks, Inc.  
 Bell Atlantic Network Services, Inc.  
 Bellcore  
 BellSouth Corporation  
 Best Foods  
 BFGoodrich and Company  
 BFI of PA  
 Block Drug Company  
 The Body Shop  
 Boise Cascade Corporation  
 Booz • Allen & Hamilton, Inc.  
 Boston Consulting Group, Inc.  
 Bowles Hollowell Conner & Co.  
 Braeh Eichler  
 Bristol-Myers Products  
 Brown Asset Management  
 Burlington Industries Inc.  
 Burr & Forman/Bass, Berry & Sims  
 Caja of Catalund  
 Cannon Associates  
 CANTEL Cellular  
 Carmax  
 Champion Products, Inc.  
 The Chase Manhattan Bank, N.A.  
 Chase Securities  
 Chemical Banking Corporation  
 Chemical Securities  
 Chesebrough-Ponds USA Co.  
 CHI Systems, Inc.  
 Childress Klein Properties

Chrysler Corporation  
 CIBA-GEIGY Corporation  
 CIGNA Corporation  
 Citadel Investment Group (Wellington Partners)  
 Citibank, N.A.  
 Citibank - Securities  
 Citicorp  
 Citicorp Real Estate  
 Clairol  
 Cleveland Consulting  
 The Clorox Company  
 Coastal Healthcare Group  
 Coca-Cola Company  
 Coca-Cola Foods  
 Coca-Cola Fountain  
 Comcast Cable Communications  
 Compaq Computer Corporation  
 Computer Sciences Corporation  
 Conservation International/McDonalds  
 Consolidated Contractors Company  
 Continental Airlines, Inc.  
 Cooper Neff/BNP  
 Coopers & Lybrand  
 Cox Cable Communications Data House, Inc.  
 Cryovac Division  
 CS First Boston  
 CSC Index, Inc.  
 CSX Technology  
 CSX Transportation  
 D'Arcy Masius Benton & Bowles, Inc.  
 Decision Focus, Inc.  
 Delco Electronics Corporation  
 Deloitte & Touche L.L.P.  
 Delorme Mapping Software  
 Derorite Inc.  
 Diaward Computer Systems  
 Disney Consumer Products  
 Disney Development Company  
 The Disney Store, Inc.  
 Dorling Kindersley Multimedia  
 Ducker Research  
 Duke Power  
 Dulf & Phelps  
 E & J Gallo Winery  
 Easton Consultants, Inc.  
 EDS Management Consulting Services  
 EISAI Co., Ltd.  
 Eli Lilly & Company  
 Emerson Electric Company  
 Enron Capital and Trade Resources  
 Entergy Services, Inc.  
 Epstein, Becker & Gree  
 Equifax Credit Information Services, Inc.  
 Equis Corporation  
 ERM, Inc.  
 Ernst & Young Health Care Consulting Group  
 Ernst & Young Management Consulting Group  
 Ernst & Young Special Services Group  
 Estee Lauder  
 Ethicon Endo-Surgery  
 Export-Import Bank of US  
 Exxon Company, USA  
 Fairview Capital, L.L.C.  
 Federal Reserve Bank of New York  
 Fidelity Investments Brokerage Group  
 Fidelity Investments Money Market Division  
 Fidelity Investments Retail Marketing Division  
 First Union National Bank of North Carolina  
 The First National Bank of Chicago  
 First Consulting Group  
 First Media  
 Fischer-Rosemount/Emerson Electric  
 Fitch Investors Service, Inc.  
 FMC, Corporation  
 Ford Motor Company  
 Fowler White  
 The Franklin Mint  
 Frisbee Publishing  
 Frito-Lay, Inc.  
 Furniture Today  
 Furon Company  
 GE Capital Commercial Finance Group  
 GE Capital Corporate Finance Group Inc.  
 GE Capital Global Project/Structured Finance Group  
 Gemini Consulting  
 General Electric Company  
 General Instrument Corporation  
 General Mills, Inc.  
 General Motors Corporation  
 General Motors (NAO) Finance Division  
 General Motors (NAO) for Worldwide Purchasing  
 General Re Financial Products Corp.  
 Gillette  
 Glaxo Wellcome Inc.  
 GM Delco  
 GM Delphi  
 GM Hughes Space and Communication  
 GMAC (General Motors Acceptance Corporation)  
 Goldman, Sachs & Co.  
 Graham, Hamilton, & Dwyer, Inc.  
 Great Salt Lake Minerals Corporation  
 GTE  
 GTE Hawaiian  
 The Gymboree Corporation  
 H-E-B Grocery Company  
 Hamilton-KSA  
 Harris Williams and Company  
 Hawaiian Electric Light & Co.  
 Hay Management Consulting  
 Herrs Foods  
 Hershey Chocolate  
 Hewlett Packard Company USA  
 HK Associates  
 The HMO Group  
 IBM Corporation  
 IBM Insurance Business  
 IDEXX  
 IMC, Inc.  
 Information Management Consultants, Inc.  
 Institute of Global Competitiveness Inc.  
 Intel Corporation  
 InterAmerican Development Bank  
 International Paper Company



International Paper Company -Treasury Dept.  
 Interstate/Johnson Lane  
 ITT Corporation  
 J.P. Morgan & Co., Inc.  
 James River Corporation  
 Jimmy Dean Foods  
 Johnson & Johnson Consumer Products Inc.  
 Johnson & Johnson International  
 K-III Communications Corp.  
 Kappler Safety Group, Inc.  
 The Kennedy Center  
 Kimberly-Clark Corporation  
 Kohler  
 KPMG Peat Marwick  
 Kraft General Foods -Kraft USA  
 Kutak Rock  
 Kyocera International, Inc.  
 L'Oreal /Cosmetic & Fragrance  
 L&F Products  
 Lake West Group  
 Landenberg Malmann  
 Legg Mason Wood Walker Inc. (Corp. Finance Division)  
 Legg Mason Wood Walker (Institutional Sales)  
 Legg Mason Wood Walker, Inc. (PCS Division)  
 Lehman Brothers  
 Lever Brothers Company  
 Lewin-Vhi  
 Loral Federal Systems  
 Los Alamos National Labs  
 M.M. Fowler, Inc.  
 Marriott Corporation  
 Mars, Inc.  
 Mastercard International  
 Mattel Toys Inc.  
 Maybelline  
 MBA Enterprise Corps  
 MBS Enterprise Corp./Centrium Skory  
 MCA Universal  
 McGraw Hill, Inc.  
 MCI  
 MCI Government Systems  
 McKinsey & Company, Inc.  
 McNeil Consumer Products Company  
 Mercer Management Consulting Company  
 Merck & Company  
 Merck Human Health Division - USA  
 Merrill Lynch & Co.  
 Microsoft Corporation  
 Miller, Anderson, Sherrord  
 Milliken & Company  
 Miramax Films  
 Mobil Corporation  
 Morgan Keegan & Company, Inc.  
 Morgan Stanley & Co. Incorporated  
 Motorola - Land Mobile Products Sector  
 MSI Software  
 Murcontik Storzs  
 Nabisco Foods Company  
 The NAMES Project Foundation  
 National City Corporation  
 National Semiconductor  
 NationsBank Corporation  
 Nestle Food Corp.  
 New York Life Insurance Company  
 Nippon Life Insurance Co.  
 Nomura Securities International Inc.  
 Northern Telecom (NorTel) Inc.  
 Northwestern Healthcare Network  
 Novations Group, Inc.  
 Oak Value Capital Management  
 Omni Professional Environment Assocs. PA  
 Oracle Corporation  
 Ore-Ida Foods Inc.  
 Otis Elevator Company  
 Pacific Forest Trust  
 Packard Electronics  
 PCG  
 PDU Services  
 Performance Properties  
 Pfizer Incorporated  
 Philip Morris USA  
 Philip Morris Kabushiki Kaisha (Japan)  
 Piper Jaffray, Inc.  
 Planters LifeSavers Company  
 Playtex Products, Inc.  
 PNC Bank  
 Popeyes Chicken & Biscuits  
 Porsche AG  
 Price Waterhouse  
 Primerica Financial Services  
 Princeton Investment Management Company  
 Procter & Gamble  
 PRTM (Pittiglio Rabin Todd & McGrath)  
 Prudential Private Placement Group  
 Public Consulting Group, Inc.  
 Putnam Investments  
 Putnam, Lovell & Thornton  
 The Quaker Oats Company  
 Quantum  
 Raymond James & Associates  
 RCS Technologies, Inc.  
 Reckitt & Colman  
 Red Lobster  
 Reed, Smith, Shaw, & McClay  
 Rhone - Poulenc Ag  
 Riverside Health System  
 Roanoke Regional Hospital  
 Rockbrook Camp  
 Rogen Cable Systems  
 Rohm & Haas Company  
 Roland Berger & Partner GmbH  
 Ross Products of Abbott Labs.  
 Rubbermaid  
 Ryder System, Inc.  
 The SABRE Technology Group  
 Saint Paul Insurance  
 Salomon Brothers Inc.  
 Sara Lee Corporation  
 Saturn Corporation  
 Schering-Plough Corporation  
 Schering-Plough Healthcare Products  
 Scott, Madden & Associates Inc.  
 Sea-Land Services, Inc.

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| Security Capital Atlantic Inc.           | Textron, Inc.                                  |
| SEI                                      | Thomson Consumer Electronics                   |
| Shell Oil                                | Tiber Group                                    |
| Showtime of Los Angeles                  | Time, Inc. - People Magazine                   |
| Siecor Corporation                       | Time Warner Inc.                               |
| Signet Bank Card                         | TRW, Inc.                                      |
| SkyTel                                   | U.S. Army                                      |
| Smith Barney                             | UB Networks                                    |
| SmithKline Beecham Consumer Healthcare   | Unilever United States, Inc.                   |
| Sonat Offshore Drilling, Inc.            | Unisys Corporation                             |
| The Southern Company                     | United Parcel Services                         |
| Southern Development & Investment Group  | United Technologies                            |
| Southern Rural Dev. Council              | USAir  |
| Spectrum                                 | US Data Corporation                            |
| Sprint (Canada)                          | Van Houten Asia/Pacific Ltd.                   |
| Sprint Corporation                       | Vesser Brothers, Inc.                          |
| Strategic Compensation Association       | Wachovia Bank of Georgia                       |
| SunHealth Alliance, Inc.                 | Walt Disney Records                            |
| Sutro & Company, Inc.                    | Wendy's International, Inc.                    |
| Swiss Bank Corporation                   | Westvaco Corporation                           |
| T. Rowe Price Assoc.                     | Wheat First Butcher & Singer - Corp. Finance   |
| Telecommunications Technique Corporation | Wheat First Butcher & Singer - Equity Research |
| Teleflex Incorporated                    | Windsor Group                                  |
| Teva Pharmaceutical                      | Xerox Corporation                              |





*Student Life*



## Living Accommodations

Most M.B.A. students live off campus in housing or apartments not owned by the university (see the section entitled Off-Campus Housing). However, Duke University has residential facilities in which some graduate and professional students may live.

**Town House Apartments.** Town House Apartments, located about three blocks from the main East-West Campus bus line, is a thirty-two-unit complex, which houses only graduate and professional school students. These apartments are more spacious than most apartments found on campus or in Durham. Because of their location away from the academic facilities, students find that these apartments offer a change from normal campus life and activities. They are available for continuous occupancy throughout the calendar year.

Each apartment includes a living room, a master bedroom, a smaller bedroom, a bath and a half, and a kitchen with a dining area. Spacious closets and storage spaces are provided within each apartment. A swimming pool, located in the center of the complex, is open during the late spring and throughout the summer months. All Town House Apartments are completely furnished by the university. An itemization of furnishings is included with the floor plans sent out in the application packet.

All utilities—water, heat, air-conditioning, and electricity—are provided. Residents must make arrangements with the local utility company to pay for telephone service. Usually a deposit is required when initial application for service is made. The utility company should be contacted prior to arrival as it usually takes several days to obtain service. Residents must provide their own phones.

**Central Campus Apartments.** Apartments in this 500-unit complex are available throughout the calendar year for continuous occupancy to single students attending graduate and professional school and undergraduate schools.

Located in the center of the complex is a swimming pool (open during the late spring and throughout the summer months), a convenience store, and a pub.

All Central Campus Apartments are completely furnished by the university. An itemization of furnishings is included with the floor plans sent out in the application packet.

All utilities—water, heat, air-conditioning, and electricity—are provided. Central Campus Apartments' residents are responsible for making arrangements with Duke University's Tel-Com telephone service to pay for telephone service. Residents must provide their own phones.

Efficiency, two-bedroom, and three-bedroom apartments are rented to students. Efficiency units are very limited in number and are generally not available to new

students. Spaces in apartments for single students are provided on an individual basis with each student paying rent per academic year to the university. This method permits students to share apartments with others of their choice. When this is impractical, the Department of Housing Management strives to place persons with similar interests together.

**Application Procedures.** When students are informed of their acceptance to the business school they will also receive a postcard on which to indicate preference for university housing. This postcard should be returned to the Department of Housing Management. Detailed information on the types of accommodations and application forms will be forwarded to the accepted student. Assignment to all university housing is made on a first-apply, first-assigned basis and is not guaranteed.

**Off-Campus Housing.** The Department of Housing Management maintains a listing of rental apartments, rooms, and houses provided by property owners or real estate agencies in Durham. These listings are available in the department only; during the summer an assistant is available to answer questions and aid students in their attempts to obtain housing off-campus. Information on commercial complexes in the Durham area may be obtained by indicating a preference for off campus housing on the postcard which you receive with your acceptance packet. Except for assuring that owners sign a statement of nondiscrimination, off-campus property is in no way verified and neither the university nor its agents negotiate between owners and interested parties.

The search for accommodations should begin as soon as possible after acceptance to the business school. A visit of two or three days will allow the opportunity to make use of the off-campus service and to inspect personally the availabilities.

## **Food Services**

Duke University Food Services (DUFS) operates a variety of dining facilities including "all you can eat" cafeterias, a la carte restaurants, fast food facilities, salad bars, seated dining restaurants, and an on-campus pizza delivery service.

Graduate and professional students may choose to pay for food purchases in cash, or they may opt to open a prepaid account. There are two accounts which a student may open—a food only dining plan and a flexible spending account. The flexible spending account may be used to purchase any food items sold by DUFS, any items sold in the university stores, and to purchase beer and wine, where available.

For more information about opening either a flexible spending account or a dining account, contact the Auxiliary Services contract office at (919) 684-5800.

In addition to the above university food services, the Fuqua School of Business has its own cash-only snack bar, The Kiosk, which serves a limited menu of light snacks, sandwiches, and beverages during normal business hours.

## **Other Services**

**Bus Service.** Free on-campus bus service is provided by the university connecting East, West, North, and Central Campuses, Science Drive and intermediate on-campus locations. Bus service is also provided between Duke Manor and Chapel Tower Apartments and the campus, during the academic year only. Printed schedules are available at the Bryan Center Information Desk, the Housing Management service offices, and from the transportation office located at 712 Wilkerson Avenue, just off East Campus behind Brightleaf Square. Schedules are also posted at each of the major bus stops.

Route, schedule, and employment information is available weekdays by calling (919) 684-2218.

**University Stores.** University Store operations on campus sell textbooks, school supplies, health and beauty items, room accessories, gifts, clothes, and food items. Items



may be purchased with cash, check, Visa or Mastercard, or on the Duke Card flexible spending account (see description under Food Services).

The Bryan University Center is the location of four of the stores' operations: the University Store sells school, office and computer supplies, and gift items with Duke University's official logos; the Duke University Bookstore sells textbooks, technical reference books, study aids, and computer software; the Gothic Bookshop stocks new fiction and nonfiction titles; and the Lobby Shop sells magazines, newspapers, health and beauty aids, and snack foods.

## Student Activities

**M.B.A. Student Association.** The association serves as liaison between the students and faculty and administration in both academic and nonacademic matters. The structure of the association includes many standing and ad hoc committees dealing with concerns such as admissions and placement, computer and library facilities, intramural sports participation, alumni, and social events.

**Cocurricular Activities.** Graduate students at Duke University are welcome to use such university recreational facilities as swimming pools, tennis courts, and a golf course, and to affiliate with the choral, dance, drama, music, and religious groups. Doctoral students may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities.

A full program of cultural, recreational, and religious activities is presented by the Office of Cultural Affairs, the Duke University Parish Ministry, the Duke University Union, the Office of Student Activities, and recreational clubs. The Duke University Union sponsors a wide range of programs through its committees which are open to all segments of the campus community. Included are touring Broadway shows; rock, jazz, and pop concerts; speakers; films; a film-making program; a student-run television station; art exhibits in two galleries; and a broad program in crafts located in Southgate Dormitory and the Bryan University Center.

The University Center complex includes the new Bryan University Center, which houses the Information Center, two drama theaters, a film theater, lounges, stores, meeting rooms, games room, rathskeller, art gallery, and other facilities; the West Union which includes dining facilities; and Flowers Building, which includes student publications, Page Auditorium, and the university box office.

Inquiries should be directed to the Intramural Office, 105A Card Gymnasium; the Office of Cultural Affairs, 107 Page Building; Duke Chapel; the Duke University Union, Bryan University Center; or the Office of Student Activities, Bryan University Center.

Full information regarding the scheduling of major events and programs for the entire year will be found in the Duke University *Annual Calendar*; detailed and updated information for the fall and spring semesters in the *Weekly Calendar*, available each Friday; updated information for the summer session in the *Summer Session Calendar*, published at the beginning of each summer term; and the *Duke Chronicle*, published each Monday through Friday during the fall and spring and each Wednesday during the summer. Copies of the Duke University calendars may be obtained at the information desk, Flowers Building, or the calendar office, Page Building. Also during the summer, the *Summer Session Newsletter* is published weekly by the summer session office and is available at convenient locations.

**Intramural and Recreational Sports.** The Duke recreational and intramural programs provide all students with opportunities to participate in some form of healthful, informal, and competitive physical activity. In a typical year, more than 3,000 students compete for many intramural titles and trophies.

The men's and women's intramural programs include many different activities (e.g., bowling, cross-country, golf, handball, horseshoes, table tennis, volleyball, soccer,

softball, and track). In addition, special events in other areas of interest are held. Various performing clubs, including one for water ballet, offer the student opportunities to take part in extracurricular activities. Through coeducational intramurals, the student is encouraged to participate on a less competitive level, promoting relaxed social and physical activity. Opportunities for competition between men and women are provided in areas that include archery, badminton, basketball, softball, racquetball, squash, table tennis, tennis, volleyball, and water polo.

The university's varied athletic and recreational facilities and equipment are available for use by students. The facilities for recreation include a golf course, lighted tennis courts, three swimming pools, squash and racquetball courts, three gymnasiums, a weight training room, outdoor handball and basketball courts, an archery range, horseshoe courts, an all-weather track, numerous playing fields, jogging and exercise tracks, and informal recreational areas. More than thirty sports clubs dealing with gymnastics, scuba diving, sailing, cycling, crew, riding, fencing, football, frisbee, ice hockey, kayaking, lacrosse, badminton, karate, rugby, soccer, and other activities are available to interested students.

**Graduate and Professional Student Council.** The Graduate and Professional Student Council is the representative body for the students of graduate departments and professional schools. The council provides a means of communication between schools and between graduate students and the administration. The council selects graduate students for membership on university committees. Representatives of each department and officers of the council are selected annually.

**Religious Life.** The Duke Chapel is open daily for prayer and meditation. The Sunday morning worship in the Chapel at 10:55 A.M. is the central focus for university religious life. The Chapel Choir is open to those who wish to sing in it. The Benjamin N. Duke Memorial Organ is played Monday through Friday from 12:30 P.M. to 1:30 P.M. Special guest recitals are also scheduled. The ministers and other members of the Chapel and Religious Life staffs are available to provide counseling help and other assistance as needs arise.

## Health Care

**Medical Care.** The aim of the Student Health Service is to provide any medical care and health advice necessary to the student as a member of the university community. The health service maintains the Student Health Services Clinic located in the Pickens Building on West Campus. Emergency transportation can be obtained by the Duke campus police. A separate fee for the Student Health Service is assessed.

The Student Health Services Clinic offers the student outpatient services, routine laboratory and X-ray examinations in the clinic for the treatment of acute illness or injury, and advice and assistance in arranging consultation for medical treatments. Fees for such consultations or treatments must be paid by a student who is not covered by an insurance plan.

The facilities of the University Infirmary, located in Duke Hospital South, are available to all currently enrolled full-time students in residence during the fall and spring. Hospitalization in the University Infirmary is provided for treatment of acute illness or injury as authorized by the Student Health Services Clinic physician. Students are required to pay for their meals while confined to the infirmary. The resources of the Duke University Medical Center are available to all Duke students and their spouses and children. Any bills incurred at Duke Hospital or any other hospital are the responsibility of the student, if not covered by an insurance plan. The Student Health Program does not provide health care for spouses and dependent children of married students. Coverage of the married student's family is provided in the university's Student

Accident and Sickness Insurance Plan for an additional fee. Refer to the chapter, "Financial Information," for complete information on this plan.

**Counseling and Psychological Services.** CAPS provides a comprehensive range of counseling and psychological services to assist and promote the personal growth and development of Duke students. The professional staff is composed of clinical social workers, psychologists, and psychiatrists experienced in working with young adults. Among services provided are personal, social, academic, and career counseling. A number of short-term seminars or groups focusing on skills development and special interests such as coping with stress and tension, fostering assertiveness, enriching couples' communication, and dealing with separation and divorce are also offered. A policy of strict confidentiality is maintained concerning information about each student's contact with the CAPS staff. Individual evaluation and brief counseling/therapy as well as career and skills development seminars are covered by student health fees. There are no additional charges to the students for these services. Appointments may be made by calling (919) 660-1000 or visiting CAPS, 214 Page, West Campus.



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## *Academic Procedures and Information*



## Registration

Students enrolled in the Fuqua School of Business must register each semester until all degree requirements are completed. New matriculants register during orientation week. In the case of independent studies, courses outside the school and overloads, it will be necessary to obtain the permission of the instructor and the M.B.A. program director.

**Late Registration.** All students are expected to register at the times specified by the university.

**Change of Registration.** Registration may be changed during the drop /add period which extends through the first three days of each term.

## Academic Requirements for the M.B.A. Program

**Grading.** The grading scale for M.B.A. students is: Superior Pass (*SP*)-4.0; High Pass (*HP*)-3.5; Pass (*P*)-3.0; Low Pass (*LP*)-2.5; and Fail (*F*).

**Continuation Requirements.** An M.B.A. student is expected to complete all courses approved by the program director for a given semester and attain a GPA of 3.0 to proceed to the next semester of the program.

Any student who receives a grade of fail (*F*), or a grade point average of less than 3.0 after any term, will be subject to academic performance review. The student's academic standing is determined during the performance review by the respective program director and the faculty of the Curriculum Committee. Any mitigating circumstances that may have inhibited a student from making satisfactory progress will be heard and evaluated at that time.

In order to be certified as making satisfactory progress toward the degree, a student enrolled in the M.B.A. program must:

1. Complete all courses approved by the program director for a given semester and attain a GPA of 3.0 or: have been reviewed by the program director and faculty of the Curriculum Committee, where it must be determined that mitigating circumstances did inhibit the student from meeting all course requirements or attaining a 3.0 GPA. Under these circumstances the student

will be allowed to continue the program with a GPA below 3.0 and still be considered as making satisfactory progress toward the degree.

2. Complete the program according to the following schedule: a minimum of 48 credits in the first academic year of the program, and 85 credits by the end of the second academic year of the program.

Students on official leaves of absence from any program will be exempted from these requirements for the duration of that leave.

**Graduation Requirements.** An M.B.A. student who has successfully completed all program requirements and has earned a grade point average of at least 3.0 will be graduated.

**Course Exemptions.** It is possible to obtain an exemption from any of the first year required courses either by administrative exemption or by exam. Administrative exemptions are offered in areas where prior satisfactory course work is documented by the student. Students may also take exemption exams for any of the core courses during orientation

No course work done before matriculation at Fuqua is transferable to the M.B.A. degree.

**Standards of Conduct.** Duke University expects and will require of all its students' cooperation in developing and maintaining high standards of scholarship and conduct. The university wishes to emphasize its policy that all students are subject to the rules and regulations of the university currently in effect or which are put into effect from time to time by the appropriate authorities of the university.

Any student in accepting admission indicates a willingness to subscribe to, and be governed by, these rules and regulations and acknowledges the right of the university to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the university.

The Fuqua School of Business has established its own Honor Code which is overseen by a Judicial Board comprised of three faculty and three student members. The Honor Code governs conduct and the integrity of student scholarship.

## Commencement

Graduation exercises are held in May for daytime students and in October for Weekend Executive M.B.A. students. At this time degrees are conferred and diplomas are issued to those who have completed requirements.

## Other Information

**Student Records.** Duke University adheres to a policy permitting students access to their student records, with the exception of confidential letters of recommendation received prior to January 1, 1975, and certain confidential financial information. Students may request review of any information which is contained in their student records and may challenge the content of their records by appropriate procedures. An explanation of the complete policy on student records may be obtained from the associate registrar of the university.

No information contained in student records (academic or otherwise) is released to persons outside the university or to unauthorized persons on the campus, without the consent of the student. A student grants consent by signing a form which authorizes the release of data. Specific consent is required for the release of information to any person or organization outside the university, and it is the responsibility of the student to provide the necessary authorization and consent. Students are assessed a one-time transcript fee of \$30. Official transcripts may be sent by the university registrar at the



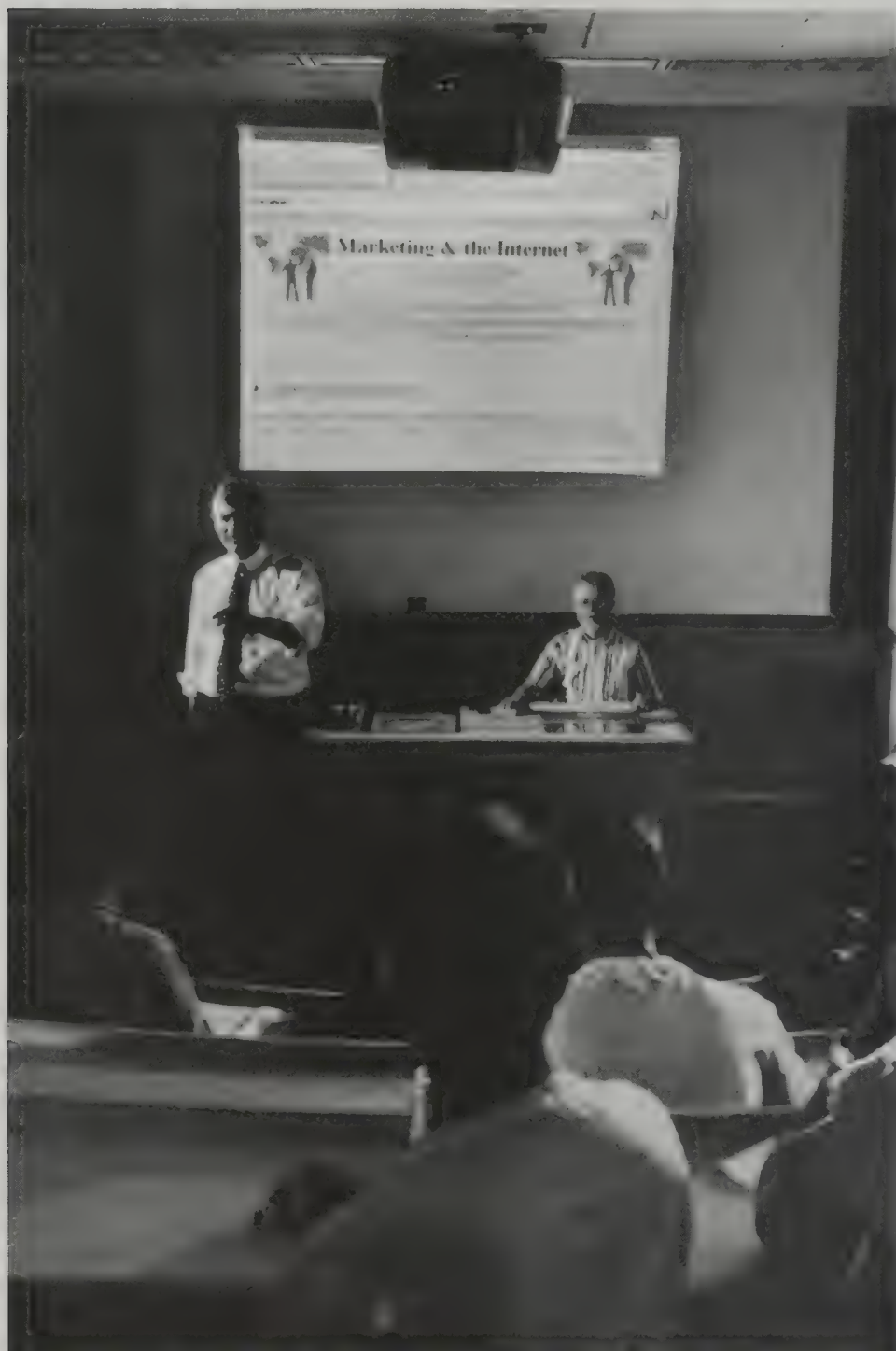
signed request of the student. Send written, signed requests for transcripts, including full name, school attended, social security number, where the transcript(s) is to be sent, and your address for acknowledgment to: Office of the Registrar, Duke University, Box 90055, Durham, NC 27708-0555; or you may fax your signed requests to (919) 684-4500.

**Reciprocal Agreements with Neighboring Universities.** Under a plan of cooperation between Duke University and the University of North Carolina at Chapel Hill, the University of North Carolina at Greensboro, North Carolina Central University in Durham, and North Carolina State University at Raleigh, students properly enrolled in the Fuqua School of Business during the regular academic year, and paying full fees to this institution, may be admitted to a maximum of two courses per semester and four courses total at one of the other institutions in the cooperative plan. Under the same arrangements, students in the graduate schools in the neighboring institutions may be admitted to course work at Duke University. All interinstitutional registrations involving extra-fee courses or special fees required of all students will be made at the expense of the student and will not be considered a part of the Duke University tuition coverage.

**Identification Cards.** Graduate students are issued Duke University identification cards which they should carry at all times. The cards are the means of identification for library privileges, athletic events, and other university functions or services open to them as university students. Students will be expected to present their cards on request to any university official or employee. The cards are not transferable, and fraudulent use may result in loss of student privileges or suspension. A student should report the loss of a card immediately to the registrar's office. The cost of a new identification card is \$10.

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## *Courses of Instruction*



# Master of Business Administration

## Core and Elective Courses

The core curriculum of the M.B.A. Program is on page 14 of this bulletin. Unless specified otherwise, each course is worth three units of credit.

**200. A-L. Foreign Language Topics.** In keeping with the Fuqua School's strong commitment to providing an international perspective in the MBA program, this series of courses enables students to begin or continue study in one of several foreign languages. Register for course section by designated suffix A-L. 3 units. *Staff*

**300. Managerial Economics.** This course considers how the actions of business firms, consumers, and the government—operating within a price system in a decentralized market economy—answer such basic resource allocation questions as what will be produced, how it will be produced, who will consume what is produced, and what resources to divert from present consumption to increase future consumption. The impact of various types of market structures (such as perfect competition, monopoly, and oligopoly) on economic efficiency will be discussed. 3 units. *Staff*

**301. Economic Environment of the Firm.** This course provides an analytical framework for understanding the economic forces that shape business decisions. It examines the behavior of unemployment, inflation, the trade balance, interest rates, and exchange rates. Special emphasis is placed on government policy towards these variables and current economic problems. 3 units. *Staff*

**311. Probability and Statistics.** Examines structures for managerial decision making under conditions of partial information and uncertainty. After developing a foundation in probability theory, the course extends this foundation to a set of methodologies for the analysis of decision problems. Included are topics in probability, statistical inference, and regression analysis. 3 units. *Staff*

**312. Decision Models.** Examines the principles and techniques of building quantitative models to aid managerial decision making. Special emphasis is placed on utilizing models for structuring and analyzing resource allocation problems and decision problems under uncertainty. Topics include linear programming, decision analysis, and simulation. 3 units. *Staff*

**320. Managerial Effectiveness.** Provides an introduction to the study of the behavior of individuals and groups within organized settings. The relationship of organizations to their environments is also examined. Emphasis is given to managerial strategies which enhance organizational effectiveness. Topics include leadership, selection and training, motivation and reward systems, decision making, conflict management, and organization structure and design. A mixture of lectures, cases, and experimental exercises is used to develop managerial skills. 3 units. *Staff*

**330. International Business Management.** The course provides to the students two different types of information to analyze and effectively make decisions. At a first level, it provides the student an understanding of important factors in the international environment (for example, economic, political, cultural, technological) that influence their decisions. At a second level, it provides the student with an organized framework to proceed from an understanding of the international environment to develop strategic and cross-functional responses to specific challenges that MNEs face. 3 units. *Staff*



**340. Financial Accounting.** Introduces the student to the types of information requirements imposed on the firm by agencies in its environment and develops an understanding of the activities of the firm within the framework of a financial accounting system designed to satisfy these information requirements. Emphasis is given to the study of financial accounting, reporting, and measurement problems from a theoretical and an applied basis, using cases and topical problems in financial accounting as a foundation for the learning experience. 3 units. *Staff*

**341. Managerial Accounting.** Focuses primarily on managers who are users rather than preparers of accounting information. Examines the use of accounting information in its major functions of planning, control, and product costing. Specific topics include cost estimation, budgeting, standard costing, control and performance evaluation, cost allocation, information systems, data limitations, and rational decision making using accounting information. 3 units. *Staff*

**342. Corporate Financial Reporting I.** Examines problems of asset and liability valuation and the related issues of income determination from the perspective of the professional accountant. The information needs of financial statement users are emphasized. Frequent reference is made to professional accounting pronouncements. Prerequisites: Master of Business Administration standing, one course in financial accounting, and one course in managerial accounting. 3 units. *Staff*

**343. Measurement and Control of Product Costs.** Study of the relationship between product costing systems and strategic analysis. Strategic planning depends heavily on the output of cost accounting systems, and decisions based on incorrect product costs are likely to be wrong. Furthermore, productivity improvements cannot usually be made unless reliable cost data are available. Recently many firms have discovered that their cost systems do not supply reasonable information. Apparently profitable products actually lose money, and relevant data for decisions are not obtainable. Use of case studies and articles to examine why many cost systems are unsatisfactory, what the symptoms of cost system failure are, and how appropriately to structure an improved system. 3 units. *Staff*

**344. International Strategy.** Examination of the reasons for location of production in the world, laying the conceptual foundations for three levels of analysis: the country, the industry, and the firm. It extends competitive analysis to a multinational context, analyzing the globalization of markets and the way market factors, technological shifts, governmental policies, and other factors cause a shift in the comparative advantage of firms. The course also deals with the impact of strategic choices of government/business interaction in both developed and developing countries, and implementation issues of how strategic changes are managed across borders. 3 units. *Staff*

**346. Business Law.** Considers the legal environment of business with emphasis on the legal system, the process by which laws are formulated and changed, and the type and forms of legal constraints imposed on businesses. Also examined are major legislation, court cases, and regulation by federal agencies which affect the firm's decisions. Prerequisite: second-year standing in the Master of Business Administration program or consent of instructor. 3 units. *Staff*

**347. Legal Environment of Business.** The foremost goal will be to provide a clear and comprehensive introduction to the nature and functions of our legal system and its importance to business managers. Major concepts will be placed in their historical and contemporary context, with discussion of what the law ought to be and how it might change in the years ahead. The course also will attempt to provide a more focused treatment of selected substantive rules dealing with issues of particular importance, in sufficient detail to be useful for future planning purposes. In all instances, the presentation will attempt to convey the dynamic interplay between business decisions and the ever-changing legal environment. 3 units. *Staff*

**348. Business Planning.** Presents corporate, security, and tax issues for analysis and resolution through examining a series of problems involving common business transactions. The problems will include such topics as the formation of closely-held and public corporations, stock redemption, the sale of a business, merger and other types of combination transactions, and recapitalization, division, and dissolution of corporations. 3 units. *Staff*

**350. Financial Management.** Provides an overview of corporate finance, financial markets, portfolio diversification, and asset pricing. Since firms must understand financial instruments and how the market views them before making decisions about which ones to use, fundamental issues and models of risk, return, and asset pricing are presented. Exercises and cases require students to project short-term and long-term financial needs, value bonds and stocks, and critique capital budgeting techniques. Futures and options markets are introduced, and students briefly manage portfolios of those contracts. Major corporate finance issues of debt and dividend policies are examined. 3 units. *Staff*

**351. Corporate Finance.** Examines the implications of modern financial theory for various decisions faced by corporate financial officers. Topics include capital budgeting, capital structure, the cost of capital, dividend policy, mergers and acquisitions, option pricing, and international financial management. Theory, empirical evidence, and case analysis all play significant roles in the course. Theory and empirical evidence together yield implications for corporate financial decision making. Case analysis forces students to apply their knowledge of theory and evidence to real-world situations. 3 units. *Staff*

**352. Investment Analysis.** The objective of this course is to develop an understanding of the institutional structure and fundamental concepts of asset valuation in financial markets. Some analytical tools will be developed to study the valuation of different types of securities. The course is structured in three parts. The first part deals with the institutional background of security markets. Particular emphasis is placed on fixed income markets. Second, the concepts of market microstructure are introduced. For example, we examine the questions: What is liquidity and how is it created? The final part of the course examines the recent advances in asset valuation (asset pricing theory). 3 units. *Staff*

**353. Futures and Options.** The purpose of this course is to extend the student's knowledge of security valuation and portfolio management by examining, in depth, the structure, valuation, and uses of derivative contracts. The course develops a general, but rigorous, framework for valuing futures and options contracts and shows the interrelations between these contract markets and the markets for the underlying securities. Specific examples are drawn from derivative contract markets on stocks, stock indexes, debt instruments, and foreign currencies. 3 units. *Staff*

**360. Marketing Management.** Provides an overview of the marketing function in business firms by acquainting students with the fundamental issues and decisions involved in planning and managing marketing activities. Attention is given to topics such as new product development, product policy, pricing, advertising and communications, marketing research, personal selling, and channels of distribution. Major emphasis is placed on developing an understanding of the underlying forces that influence marketing decisions, including buyer behavior, competitive marketing activity, organizational considerations, and governmental regulation. 3 units. *Staff*

**361. Marketing Research: Problem Formulation and Design.** Focuses on understanding data relevant to marketing managers, the types available, experimental design, methods of collection and examination. Learn to define a research goal, create an effective measurement instrument (survey, focus group, store sample), and process the resulting information for subsequent analysis. Emphasizes how the marketing research process is carried out. 3 units. *Staff*



**362. Consumer Behavior.** Provides an opportunity for advanced study of the behavior of consumers. Objectives include (1) increasing the prospective manager's sensitivity to and understanding of consumers and the psychological, sociological, and anthropological forces which shape their behavior, and (2) enabling the student to apply this knowledge in arriving at improved marketing decisions. 3 units. *Staff*

**370. Operations Management.** Covers issues in the design, planning, and control of the processes by which goods are manufactured and services are delivered. Specific topics include analysis of production processes, total quality management, managing process technology and innovation, productivity and work-force management, production planning and control, and the strategic role of operations in the firm. 3 units. *Staff*

**380. Health Services Management Orientation Seminar.** The course begins with a look at the total health care system, continues with an examination of the overall organization and role of hospitals generally, and then proceeds to a series of visits and discussions with individuals in the Duke University Medical Center. There follows a series of sessions with chief executive officers of other kinds of hospitals, a hospital system, a hospital association, and a health insurance organization. It also includes discussions concerning the opportunities for a summer internship and with recent graduates to learn of their transition into the administrative work place. No credit. *McMahon*

**381. Health Services Management Leadership Seminar.** The course consists of a series of presentations by top leaders of health care institutions, leaders of multi-institutional systems, people involved in the financing and regulation of health care, and consultants to managers in health care organizations of all kinds. The course integrates what the student has learned of the analytical techniques in the core courses, in organizational behavior, strategic management, and in health policy. No credit. *McMahon*

**390. Integrative Learning Experience: Team Building and Leadership Development.** The primary objective of the first ILE is to provide experiential and classroom-based personal development opportunities in teamwork, leadership, and social responsibility. 2 units. *Staff*

**391. Integrative Learning Experience: Competitive Business Strategy.** This ILE provides students the opportunity to use a computer-based, strategic-management simulation to operate a company in a competitive environment. 2 units. *Staff*

**392. Integrative Learning Experience: Competitive Advantage through People and Processes.** People, and how they are managed, are an increasingly important source of competitive success. This course will explore issues related to this source of competitive advantage. 2 units. *Staff*

**393. Integrative Learning Experience: Complex Management Problems.** During the final ILE students address from a general management perspective a major contemporary and controversial issue that has the potential to shape the course of business over the next decade. The course is designed to address an issue which will likely affect managers three to five years *after* they have graduated. The issue requires political, economic, historical, cultural, and legal and cross-functional considerations. 2 units. *Staff*

**395, 396, 397, 398. Individual Effectiveness.** These courses integrate the expertise of the Computer Center, the Management Communication Center, and the Career Services Office to provide both immediate and long term benefits to students. Objectives include: (1) providing timely computer education and support in core courses; providing instruction on software tools to enhance managerial decision making; (2) providing opportunities to develop the personal speaking, writing, and interaction capabilities necessary for success in the Fuqua School and in managerial careers; and (3) acquainting students with the challenges in career planning and development; equipping students with the skills necessary to prosper in the placement process. 2 units each. *Staff*



**400. Business After Communism.** Helps students to understand the business environment of postcommunist countries, particularly in Eastern Europe and the former Soviet Union. The course is very practical and action-oriented. Students will need to draw extensively on their knowledge of economics. 3 units. *Staff*

**405. Managing the Governmental Relationship.** Provides the student with an ability to understand and manage private sector problems and opportunities created by government programs. By examining the processes used by the legislative, executive, and judicial branches to create, implement, and enforce laws and regulations, the prospective manager will be prepared to compete effectively in markets controlled or affected by government activities. The course will consider the management problems created by the United States antitrust laws and various government agencies regulating environmental hazards, energy, and health and safety. 3 units. *Staff*

**406. Economic Models for Consulting Practices.** The purpose of this course is to give students hands-on experience in applying econometric tools, primarily regression analysis, to managerial problems. The course extends the introductory statistics course by providing extensive applications of the tools of regression analysis. It complements the elective in time-series analysis, but there is very little overlap between the two electives. The course is designed for quantitatively-oriented students who wish to learn more about statistical analysis and who wish to develop the ability to estimate statistical models derived from both micro- and macroeconomic theories. 3 units. *Staff*

**407. Strategic Approaches to Congressional Policy-making.** Course will study the evolving relationship between business and government at all levels, with emphasis on the federal level. The first half of the course will focus on the U.S. Congress. How does Congress make decisions on issues of primary concern to business? How is it affected by outside influences, such as the media, campaigns, other branches of government, public perceptions, and interest groups? How has its interaction with that environment changed over time? The course will then apply principles derived from this study to other levels of government. Final section of the course will probe the existing relationship between multinational corporations and nation states, and how the relationship is changing in the "Global Economy." 3 units. *Staff*

**408. Health Care Policy.** Examines special aspects of health care law, financing, and health care policy. The provision of health care in the United States exists within a unique and complex environment. State and federal governments, through laws, programs, reimbursements, and payments, create a special environment for health care providers. Similarly, third-party insurers, and more recently, corporations, are taking active steps in modifying this environment. This course is required of all HSM Concentrators and is open to all second-year MBA's and first-year MBA's with consent of instructor. Good candidates for this course are MBA students who have an interest in health in health, biotechnology, pharmaceutical, and human resource management. 3 units. *Staff*

**410. Decision Analysis.** Managers must operate in an environment with many uncertainties, and they are faced with a variety of risky choices involving many conflicting factors. They need to take account of uncertainties and multiple objectives and to select appropriate risk postures. Decision analysis provides a framework for analyzing decision-making problems under uncertainty by breaking them down into more manageable parts. The study of decision analysis involves some formal methods, but perhaps even more important, it suggests a useful way of thinking about and approaching risky decisions. 3 units. *Staff*

**411. Statistical Forecasting.** Increased access to computer data bases and modeling tools presents the modern manager with opportunities and challenges to use statistical data analysis in forecasting, planning, and decision-making. This course will cover the use of major statistical forecasting techniques, including multiple-regression and time-

series models, that are applicable in many functional areas of business. It will emphasize hands-on computing with a microcomputer statistics package. 3 units. *Staff*

**412. Advanced Decision Models.** Surveys the methodologies of operations research and shows how they can be applied to decision-making situations. The course will be concerned primarily with selecting which tool to use in various situations, rather than algorithmic details. Topics to be covered may include dynamic programming, stochastic programming, integer programming, nonlinear programming, Markov chains, inventory theory, and linear model formulation. 3 units. *Staff*

**413. Quality Control.** The objective of this course is to study issues relating to the management of quality. Special attention is paid to tools for data analysis. The application of statistical procedures, the interpretation of results, and the implications for managerial decisions are highlighted. 3 units. *Staff*

**420. Managerial Decision Making.** Focuses on helping managers to understand and improve decision making. The primary objective is the development of skills in the use of computer-based decision aids that exploit the intellectual strengths of humans while overcoming their cognitive limitations. Of particular interest will be the techniques of risk and decision analysis. Case discussions, experiential exercises, as well as lectures, will be used to help develop an appreciation of the potentials of various decision aids. Prerequisite: second-year standing in the Master of Business Administration program or consent of instructor. 3 units. *Staff*

**421. Dynamics of Bargaining.** Explores the processes of bargaining and negotiation; the dynamics of interpersonal and intergroup conflict; and understanding of theory and research related to processes of influence, negotiation, and conflict management. A second part will emphasize skill development through extensive case analysis, role playing, and simulation. 3 units. *Staff*

**422. Power and Politics in Organizations.** Examines the interplay of power and politics in organizational settings with particular emphasis on the use of influence strategies in managerial decision making. Specific topics to be included are understanding the role of power in organizations, its sources and conditions for use, political strategies and tactics, and specific organizational issues such as resource allocation, career politics, organizational change, and retrenchment. Relevant research and theory will be examined but students will be encouraged to make practical application in decision-making situations through case analyses and discussion, and the development of personal skills in the politics of management. 3 units. *Staff*

**423. Managerial Leadership.** Explores what is known about effective management and leadership in organizations, and helps prospective managers identify and improve their own leadership skills. To achieve these purposes, the course will alternate between a review of past research on organizational leadership and practical skill development. Readings and class discussion will provide exposure to various models of effective managerial behavior. Students will have an opportunity to experiment with, observe, and practice the skills being considered. Topics include leadership style, organizational politics, decision making, appraising performance, planning and time management, improving group effectiveness, and conflict management. Prerequisite: second-year standing in the Master of Business Administration program or consent of instructor. 3 units. *Staff*

**424. Strategic Human Resource Management.** Provides an understanding of issues and challenges involved in the management of human resources in contemporary, complex organizations. The topics discussed include employee selection and placement, training and development, compensation and reward systems, performance evaluation, career development, human resource planning, international human resource management, and the contribution of human resource management to overall organizational effectiveness. The



cultural and legal contexts of human resource practices are also addressed. Perspectives for this course are from the line or operating managers primarily. The roles of the personnel department and the personnel specialists are evaluated. 3 units. *Staff*

**425. Ethics in Management.** The purpose of this course is to help students understand the ethical problems that confront managers and to approach their role as managers with a sense of purpose and vision. The course does not presume to teach morality; it does not have the goal of teaching right and wrong. We will explore students' own ethical orientations, the values of practicing managers, and alternative approaches to ethical problems. 3 units. *Staff*

**426. Organizing Business Activities.** The object of this course is to understand the nature of the problems of organizing so that the solutions that emerge match the part or the whole of the organization to its goals, and to make both these fit the internal and external environments. The work includes readings, cases, and examinations of actual contemporary organizing problems and decisions. This course is intended for the student who is interested in getting it together, making it happen, writing the playbook, and staying with it. Prerequisite: second-year standing in the Master of Business Administration program or consent of instructor. 3 units. *Staff*

**427. Management of Information Technology.** This course provides an overview of information technology and its management in organizations. The course aims to equip the general manager with a pragmatic understanding of IT trends—computer, telecommunications, and office systems—and the management of IT related activities. Principles of IT management will be explored not only for the large business enterprise but for government, health, and educational institutions as well. Students completing this course should understand effective management of IT and how IT can be used to facilitate organizational productivity. 3 units. *Staff*

**428. Managing Technology and Innovation.** Examines managing innovation, new technology, new product development, and research in the changing enterprise. Topics include the management of project selection, project implementation, manpower and resource allocation among competing activities, budgeting, productivity measurement and enhancement, conflict and coordination among organizational subunits, adaptive organizational subunits, adaptive organizational forms, devising incentives and reward schemes for engendering new ideas, and risk taking. The course will use a combination of readings, lecture/discussions, cases, and guest lectures by managers. Students are encouraged to do field studies. Prerequisite: second-year standing in the Master of Business Administration program or consent of instructor. 3 units. *Staff*

**429. Managing Professional Health Care Services.** This course examines the management of professional service organizations, with emphasis on the management of health service organizations. Professional service organizations include health, law, accounting, education, engineering, and architecture. 3 units. *Staff*

**430. Corporate Strategy.** This course focuses on the major phases of the strategic planning process within business organizations. Considerations involving the various functional areas of management are integrated to permit meaningful decisions concerning the product-market posture of the firm. Topics relevant to the design and implementation of strategic planning are explored within a number of different contexts; entrepreneurial, innovative, diversified, mature, and professional. 3 units. *Staff*

**431. Competitive Analysis.** The course provides insights needed to understand the behavior of firms in imperfectly competitive industries; introduces elements of Game Theory as a framework for the study of strategic interactions; and analyzes various aspects of the organization of industries. Course includes three basic themes: (1) firms typically operate under imperfect or incomplete information and make decisions under



uncertainty; their actions may reveal some of their private information; (2) firms' decisions usually are of a dynamic nature and involve intertemporal trade-offs; (3) industries are not static, but evolve over time driven by market forces, as well as by the strategic decisions of the firms. Firms operate within a constantly changing environment. 3 units. *Staff*

**432. Entrepreneurship and New Venture Management.** Provides an intensive, tutored field study of the formation of new business ventures. Students work in teams to develop market, strategic, operations, and financial aspects of original ideas toward completion of a full business plan. Entrepreneurs and new venture investors advise students on the progress of their work and evaluate final plans. 3 units. *Staff*

**436. Strategy, Management, and Organization Design of Global Corporations.** The course focuses on the management challenges associated with the development of strategies and the management of organizations in business enterprises whose operations stretch across national boundaries. The course emphasizes the way transnational corporations are different from purely domestic companies. The course addresses the choices and tradeoff involved in understanding the strategic and organizational challenges of managing transnational companies in a complex, increasingly interdependent, turbulent international environment. 3 units. *Staff*

**439. Cultural Setting of Business.** This course studies culture. The course defines culture and identifies the relevant dimensions to be used in the description of any of the many different cultures of the world. Two sets of dimensions are identified, those that differ by subject and those that differ by logical nature. The first constitutes the parts of the culture, for example, religion, politics, business, etc. The second identifies the components of a culture, those things that define a culture and every part of it. These are the concepts of truth, the beliefs, the values, the logic, and the decision rules. A culture of a people may be described in terms of either set of dimensions. 3 units. *Staff*

**440. Corporate Financial Reporting II.** Examines advanced topics in financial accounting from the perspective of the professional accountant. Specific attention is devoted to the accounting and reporting problems of complex corporate enterprises. Topics include consolidated financial statements, partnerships, and not-for-profit accounting. Prerequisite: Business Administration 342. 3 units. *Staff*

**441. Financial Statement Analysis.** Starts by describing a systematic approach to analyzing financial statements and to studying ratio analysis (over time and in cross-section), industry analysis, and cash flow analysis. Since these tools only indicate how firms have performed in the past, the course introduces tools to extrapolate past performance to the future: cash flow forecasts, firm valuation, and sensitivity analysis. The analysis of earnings quality is emphasized by examining various ways in which reporting options affect income, cash flows, financial ratios and trends. Applications such as credit analysis, growth analysis, corporate restructuring, and international financial analysis are covered. 3 units. *Staff*

**443. Management Planning and Control.** The aim in this course is more effective use of information in management, through, for example, statistical models for forecasting, probability models for control, and management science models for planning. The course also explores, from a more qualitative perspective, broad issues of control and performance evaluation in service industries, not-for-profit organizations, and multinational operations. 3 units. *Staff*

**446. Financial and Managerial Control in Service Organizations.** Concepts from both financial accounting and managerial accounting are extended and applied to for-profit and nonprofit service organizations. The financial accounting portion examines how accounting systems in such organizations differ from manufacturing firms and how these differences affect financial analysis and valuation of service organizations. The managerial portion

focuses on the use of accounting information in internal decision making. Issues include costing of activities in service organizations, activity-based management, control of operations, and performance evaluation. Intended for individuals who are seeking positions in service fields, such as health care, consulting, banking, and transportation. 3 units. *Staff*

**447. Auditing.** Examines the concepts and methods of auditing. Course content focuses primarily on what audits are (and are not), why they are done, and how they are done. Current regulatory, legal, and ethical issues are examined, as well as the value and limitations of financial and managerial accounting in business organizations. Relevant not only for those interested in professional auditing, but also for those who plan careers in business management and management consulting, particularly in accounting firms. 3 units. *Staff*

**448. Federal Taxation and Management Decisions.** This course provides a conceptual framework and basic understanding of the federal income tax system as it applies to corporations and partnerships. The material is also intended to provide students with an exposure to issues important in management tax planning of day-to-day operations. The discussion of applications will include issues such as: selection of the most appropriate form of doing business; the limitations on deductibility of educational, entertainment, and moving expenses; the relative value of stock options over other forms of compensation; the comparative consequences of the lease/purchase decision; and the probable effect of moving manufacturing operations offshore. 3 units. *Staff*

**450. Money and Capital Markets.** Considers the structure and behavior of capital markets. The course includes a discussion of the institutional framework of the American capital market as well as the major international markets, although the emphasis is on the theoretical foundation for analyzing interest rates and funds flow in those financial markets. Included among the topics is an extended discussion of monetary theory, the term structure of interest rates, and the analysis of risk in financial markets. 3 units. *Staff*

**451. Advanced Corporate Finance.** Examines in depth the major financial decisions faced by the firm. Topics include dividend policy and capital structure decisions of the firm, as well as the pricing of various financial instruments. While the major emphasis of the course is on the traditional and recent theories regarding corporate financial decision-making, much time is devoted to the consideration of empirical evidence supporting/refuting the various theoretical propositions. Time permitting, some special topics such as mergers and acquisitions and lease financing will be considered. 3 units. *Staff*

**452. International Corporate Finance.** Four dimensions characterize the special problems encountered by the international financial officer. They are: (1) the multiplicity of currencies, and attendant problems related to nominal contacts; (2) the misalignment of exchange rates vis-a-vis commodities prices and the attendant problems of competitiveness; (3) the partial segmentation of capital markets producing potential differences in costs of capital across the world; and (4) the multiplicity of tax jurisdictions. These four issues will be addressed in this course with the objective of preparing the student for careers in corporations with large operations abroad or across borders, or for careers in international banks. 3 units. *Staff*

**453. International Investments.** The course objective is to deliver the theory and the quantitative tools that are necessary for global asset management. The focus of the course is on tactical rather than passive asset management. To this end, we develop the fundamental concepts of asset valuation in a world with time-varying risk and risk premiums. We also focus on the most recent advances in quantitative forecasting methods. A unique feature of this course is that students build their own asset management software. In addition, using some of the techniques in the course, they perform an out-of-sample asset allocation. The most recent data (from DATASTREAM) is used in this real time allocation. 3 units. *Staff*



**454. Advanced Futures and Options.** The objective of the course is to provide the quantitative tools which are necessary to price a variety of derivative instruments and to hedge the often substantial risks that are involved in taking positions in derivatives. The course is very applied by nature, with a focus on models and techniques that are currently being used in practice. The techniques which are developed are applied to the most recently available data in a series of practical exercises. 3 units. *Staff*

**455. Corporate Restructuring.** This course will focus on some of the important managerial problems associated with corporate restructuring, for example, business ventures that are strategically important, particularly projects related to new expansion, acquisitions, management buyouts, leveraged buyouts, divestments, and recapitalization. Both financial and strategic tools and techniques will be emphasized. Specific financial topics included will be alternative economic criteria, interpretation of study results and their use in decision making, and strategic valuation. The point of the course is that strategically important decisions must be based on sound analyses of both the financial and the strategic implications of the decision. 3 units. *Staff*

**458. Investment Banking and Financial Intermediation.** Develops a fundamental understanding of the many roles of investment banking firms in the capital marketplace. As financial intermediaries, investment banks originate, underwrite, and distribute new security issues, serving both their issuing clients and their investing customers. Investment bank services may also include advising clients, arranging lease financing, arbitraging profit opportunities, placing unregistered securities, and providing broker and dealer services. Topics include markets and market making, and syndication and underwriting. Corporate finance decisions pertaining to investment banks (for example, mergers and tender offers) are also considered. 3 units. *Staff*

**459. Real Estate Investing.** The objective of this course is to show how to evaluate investment decisions regarding real estate. Cases, for the most part, will be based on actual situations, and students will be asked to make investment decisions where all information is not known. The course is not a survey of real estate. It will be primarily analytical, not informational. The class approach will be from an individual investor's perspective. 3 units. *Staff*

**460. Product Management.** This course develops an understanding of the roles, activities, and responsibilities of the modern product manager. The classes consist of lectures, case discussions, group presentations, and "live cases" involving a current problem of an actual company. The cases are largely taken from package goods companies and from their advertising agencies, retailers, or wholesalers. In addition, students consider related cases involving the management of services or durables, such as airlines or automobiles. Throughout, students use the kinds of market research data, such as panel, survey, or test market data, that product managers use to understand the impact of their actions on markets. 3 units. *Staff*

**461. Marketing Communications.** Includes the management of advertising, promotions, public relations, and the other more subtle ways companies communicate with their customers. Objective is to provide an approach to management that is thoughtful, sophisticated, and state-of-the-art, while being practical and relevant to "real world" communications planning, decision making, and control. 3 units. *Staff*

**462. Retailing.** Focuses on the marketing of consumer goods from the perspective of retailers. It covers both strategy and execution. The course materials are organized to provide an opportunity to compare and contrast the strategies of domestic and foreign retailers engaged in the distribution of convenience, shopping, and specialty goods. The location, and merchandise management; the determination of services to offer with the sale of particular products; organizational structure, control, and reporting systems, communications, and overall strategy. 3 units. *Ortmeyer*



**463. Business to Business Marketing.** This course will expand your ability to resolve problems and uncover opportunities in industrial markets. You will also be exposed to a number of current topics in industrial marketing, such as partnerships and the impact of corporate reorganizations. This course will focus on the areas of salesforce management, strategic market and product selection, pricing, and distribution policy. 3 units. *Staff*

**464. Marketing of Services.** Supplements the basic marketing and marketing strategy courses by focusing on problems and strategies in service businesses. Addresses problems encountered in services such as internal marketing, warranties, and assessing quality. Emphasizes services in general rather than any particular industry. Uses cases, examples, and exercises from a variety of industries such as banking, health care, financial planning, consulting, the professions, sports marketing, and communication. The course is designed for students with career interests in service industries as well as goods industries with high service components. 3 units. *Staff*

**465. International Marketing.** Develops students' knowledge of theoretical concepts and practical aspects of marketing for firms competing in countries with different cultural, legal, economic, and political environments. Designed both for those who plan to work for multinational companies and those who want to enrich their knowledge of the international marketplace. 3 units. *Staff*

**466. Marketing Research II: Analysis for Marketing Decisions.** 3 units. *Staff*

**468. Advanced Marketing Strategy.** Considers in greater depth the process of strategic planning in the marketing function and its relation to corporate strategy. Offers an opportunity to sharpen and extend analytical skills in marketing as well as to synthesize understanding of the managerial, organizational, and environmental aspects of marketing activity. 3 units. *Staff*

**470. Operations Planning and Control.** Focuses on tactical issues relevant to the management of material, labor, equipment, and inventories in production/distribution systems. Advanced models are formulated to structure the relationship between key decision variables and system performance in meeting customer delivery requirements while maintaining low costs and high quality. Particular emphasis is placed on control policies that effectively accommodate the fluctuations and uncertainties in both product demand and component supply that are typically encountered in real manufacturing environments. Topics include inventory management, aggregate production planning, master production scheduling, material requirements planning, shop floor controls, and just-in-time systems. 3 units. *Staff*

**471. Manufacturing Strategy.** Explores the use of manufacturing as a competitive weapon. The course investigates various frameworks for describing, analyzing, and assessing the strategic operations choices available to companies, with the goal of determining how a company's operations can contribute to competitive success, organizational learning, and world-class status. Among the strategic decision categories that will be examined are process and technology choices, facilities and capacity decisions, quality and productivity management, and performance measurement. 3 units. *Staff*

**472. Service Operations Management.** Explores the role of operations in service organizations by examining in depth the nature, design, and delivery of services. This course considers the strategic, tactical, and operational issues associated with the management of a broad range of service operations, such as transportation companies, professional services, financial services, restaurants, and health-care services. 3 units. *Staff*

**473. Management of Technology.** Examines the multiple impacts that technology has on the firm. Major issues of technology management will be discussed, including innovation, competitiveness, technology assessment, R & D strategy, positioning, manu-

facturing technologies, and productivity. These issues are encountered not only in the technology-based company, but in any organization. Also covered will be the incorporation of a new technology into an existing industry and the new entrepreneur-based companies that are formed to work with a technology. The course will focus primarily on management issues, using as models new technologies such as biotechnology, superconductivity, microelectronics, and fiber optics. 3 units. *Staff*

**474. Managing Innovative Production Systems.** Examines how managers evaluate and implement changes in the firm's process technology. The course looks at both soft technologies, such as information systems, just-in-time control, and group technology, and the hard technologies, such as NC machines, robotics, flexible manufacturing systems and computer integrated manufacturing. The course focuses on how to manage the changes in the structure of the firm, and how to use these systems to alter the competitive position of the firm. 3 units. *Staff*

**475. International Operations Management.** Topics covered include the organization of global operations, cultural and national comparisons, planning global operations, facilities location, sourcing, logistics, transfer of technology, currency and political risk, and coordination of the operations management function with other functions of the firm. 3 units. *Staff*

**483. Individual and Workgroup Information Management.** This course introduces the student to the fundamental concepts of organizing, modeling, and managing information using a new generation of personal computer database management software. Today, information management extends to any type of information that can be stored in a computer, such as traditional numerical and text-based information, images, sound, graphics, animation, and video. While these new definitions of computer-based information are evolving, new personal computer software tools are emerging that focus on the needs of the sophisticated end-user to manage and access this information. 3 units. *Staff*

**490. Practicum.** Topics vary each semester offered. 3 units. *Staff*

**491, 1-9. Special Topics in Management.** Permits the study of special topics in management on an occasional basis depending on the availability and interests of students and faculty. Examples of special topics include project management, legal, and tax aspects of entrepreneurship, real estate finance, labor negotiations and arbitration, and knowledge management. 3 units. *Staff*

**492, 493, 494, 495, 496. Business Study Tour.** Combines classroom study of one or more foreign countries with a visit and observation of the region studied. Participants work with a faculty leader for up to six weeks of lectures and discussion about the business and organizational systems of one or more countries. They prepare intensively to engage in meaningful discussion with overseas managers and leaders. Then the study tour group departs for a foreign visit, usually ten days to two weeks long. Activities include visits to corporations, nonprofit organizations, U.S. or host government agencies, and educational institutions, as well as cultural and historical sites. Upon return to the U.S., students are responsible for completing a written project as instructed by the faculty leader. 3 units each. *Staff*

**498. Independent Study.** Allows the student an opportunity to engage in a study of special topics on an individual basis under the supervision of a faculty member. Prerequisites: second-year standing in the Master of Business Administration program and consent of the Director of the M.B.A. Program and instructor. 3 units. *Staff*

**499. Independent Study.** Allows the student an opportunity to engage in a study of special topics on an individual basis under the supervision of a faculty member.

Prerequisites: second-year standing in the Master of Business Administration program and consent of the Director of the M.B.A. Program and instructor. 3 units. *Staff*

## Doctor of Philosophy

**510. Bayesian Inference and Decision.** Methods of Bayesian inference and statistical decision theory, with emphasis on the general approach of modeling inferential and decision-making problems as well as the development of specific procedures for certain classes of problems. Topics include subjective probability, Bayesian inference and prediction, natural-conjugate families of distributions, Bayesian analysis for various processes, Bayesian estimation and hypothesis testing, comparisons with classical methods, decision-making criteria, utility theory, value of information, and sequential decision making. C-L: Statistics 221. 3 units. *Winkler*

**513. Choice Theory.** This seminar deals with the topics of measurement theory, conjoint measurement, expected utility and subjective expected utility theory, multiattribute utility theory and recent advances in preference modeling (generalized nonlinear utility theories). The goal of this seminar is to equip students with tools so that they can use preference modeling in a wide variety of social science applications. C-L: Statistics 234. 3 units. *Staff*

**521. Organization Seminar: A Micro Focus.** Individual and small group behavior in organizations. Theories of motivation, decision making, interpersonal behavior, group processes, and leadership. A variety of research approaches and methods includes presentation of behavioral research by members of the Fuqua School of Business and other researchers. 3 units. *Staff*

**522. Organization Seminar: A Macro Focus.** The organization and the subunits which make up the organization. Theories of organization, structure, decentralization, divisionalization, functional area integration, task design, incentives and rewards, information systems, and decision rules are developed with an orientation toward their choice and design for high performance. Includes presentation of research by members of the Fuqua School of Business and other researchers. 3 units. *Staff*

**525. Behavioral Decision Theory.** Examines the development of research in individual and group decision behavior. Major emphasis is given to theoretical developments and empirical research, with a range of articles assigned for each topic. The basic topic areas include (1) decision problem structuring, (2) thinking about uncertainties, (3) risk taking, (4) dealing with conflicting values, and (5) combining individual judgments into a group decision. C-L: Psychology: Experimental 316, Psychology: Social and Health Sciences 316, and Statistics 231. 3 units. *Payne*

**531. Financial Accounting Seminar.** The nature of published financial statement information and its relationship with various economic variables. The list of related variables might include stock market data, bankruptcy filings, and the actions of various users of financial statement information, including management, investors, creditors, and regulators. The focus is on the current research methodologies and research efforts used to analyze the above relationships. A background in masters-level accounting and finance is assumed. 3 units. *Staff*

**532. Management Accounting Seminar.** Information systems and their use in facilitating management decision making and organizational control. Emphasis on the appropriate research methodologies and paradigms including information economics, decision theory, and organizational theory. Topics include budgeting, incentive systems/performance evaluation, variance investigation, and cost allocation. 3 units. *Staff*

**551. Finance Theory I.** Mathematical derivation of important results in portfolio theory and asset-pricing models in finance. Topics include: single-period mean-variance



efficient portfolios and the CAPM; pareto optimal allocations; multiperiod and continuous-time optimal consumption and portfolio rules; intertemporal asset-pricing model; arbitrage pricing theory; and the term structure of interest rates and inflation risk. Prerequisites: basic mathematics background in calculus, statistics, matrix algebra, optimization, and dynamic programming. 3 units. *Kyle or Viswanathan*

**552. Empirical Finance.** Overview of current empirical methods used in financial economics research. Topics include: univariate and multivariate tests; linear versus nonlinear models; conditional versus unconditional tests; asymptotic theory, generalized method of moments; and the size and power of test statistics. Testing procedures are applied to asset pricing theory, corporate finance, and option pricing theory problems. Prerequisite: Ph.D. level course in econometrics; recommended: Business Administration 551. 3 units. *Bansal*

**553. Finance Theory II.** Mathematical derivation of well-known models in informational economics, market microstructure, and option pricing. Topics include: models of rational expectations, signaling models, principal-agent, and auctions. Market microstructure and advanced option pricing applications are stressed. This course may be taken concurrently with Business Administration 551. Prerequisites: basic mathematics background in calculus, statistics, matrix algebra, optimization, and dynamic programming. 3 units. *Staff*

**561. Seminar in Quantitative Research in Marketing.** An overview of the quantitative techniques which are important in marketing research. Each model and technique will be examined in considerable detail so as to permit an understanding of its assumptions, structure, and usefulness. Topics covered will include the general data analysis techniques as well as models from advertising, new products, and pricing decisions. 3 units. *Staff*

**562. Seminar in Consumer Behavior.** Examines the development of research in consumer behavior. Major emphasis is given to theoretical developments and empirical research, with a range of articles assigned for each topic. Topics include motivation and personality, perceptual processes, information search, choice processes, attitudes and persuasion, learning, and influence in consumer choice. C-L: Psychology: Experimental 315 and Psychology: Social and Health Sciences 315. 3 units. *Bettman*

**563. Marketing Models Seminar.** The primary goals of this seminar are (a) to critically review the most current research in marketing and (b) to gain a better understanding of and ability to build one's own model. After taking this course, students should be able to understand the assumptions and mathematical development of the current quantitative work in marketing and to use this understanding to develop meaningful extensions. 3 units. *Staelin*

**564. Experimental Design and Analysis Seminar.** Examines issues in the design and analysis of experiments. Emphasis on analysis of variance (ANOVA), starting with the basic ANOVA model and examining multiple factor designs, blocking designs, nested models, within subject designs, repeated measure designs, and analysis of covariance. 3 units. *Edell*

**571. Operations Strategy Seminar.** Recent developments in the strategy of operations in both the manufacturing and service sectors. Topics include the focused factory concept, Japanese manufacturing philosophy, technological policy toward new process development and toward new product introduction, vertical integration, choice of capacity and location, industry analysis, and the impact of government regulation. Emphasis on the development of hypotheses about strategic topics and the empirical means by which they can be tested. 3 units. *Staff*

**572. Seminar in Operational and Technological Tactics.** Current issues in the day-to-day management of manufacturing and service delivery systems. Topics include material requirements planning, capacity requirements planning, quality of work life

projects, productivity measurement and enhancement, implementation of new product introductions and production process modifications, quality assurance, production planning and scheduling, and logistics. Concentration on the substance of recent developments, the generation and test of hypotheses about tactical issues, and the applicability of various optimization techniques to the advance of operation tactics. 3 units. *Staff*

**591. Selected Topics in Business.** Allows the doctoral student the opportunity to study special topics in management on an occasional basis depending on the availability and interests of students and faculty. 3 units. *Staff*

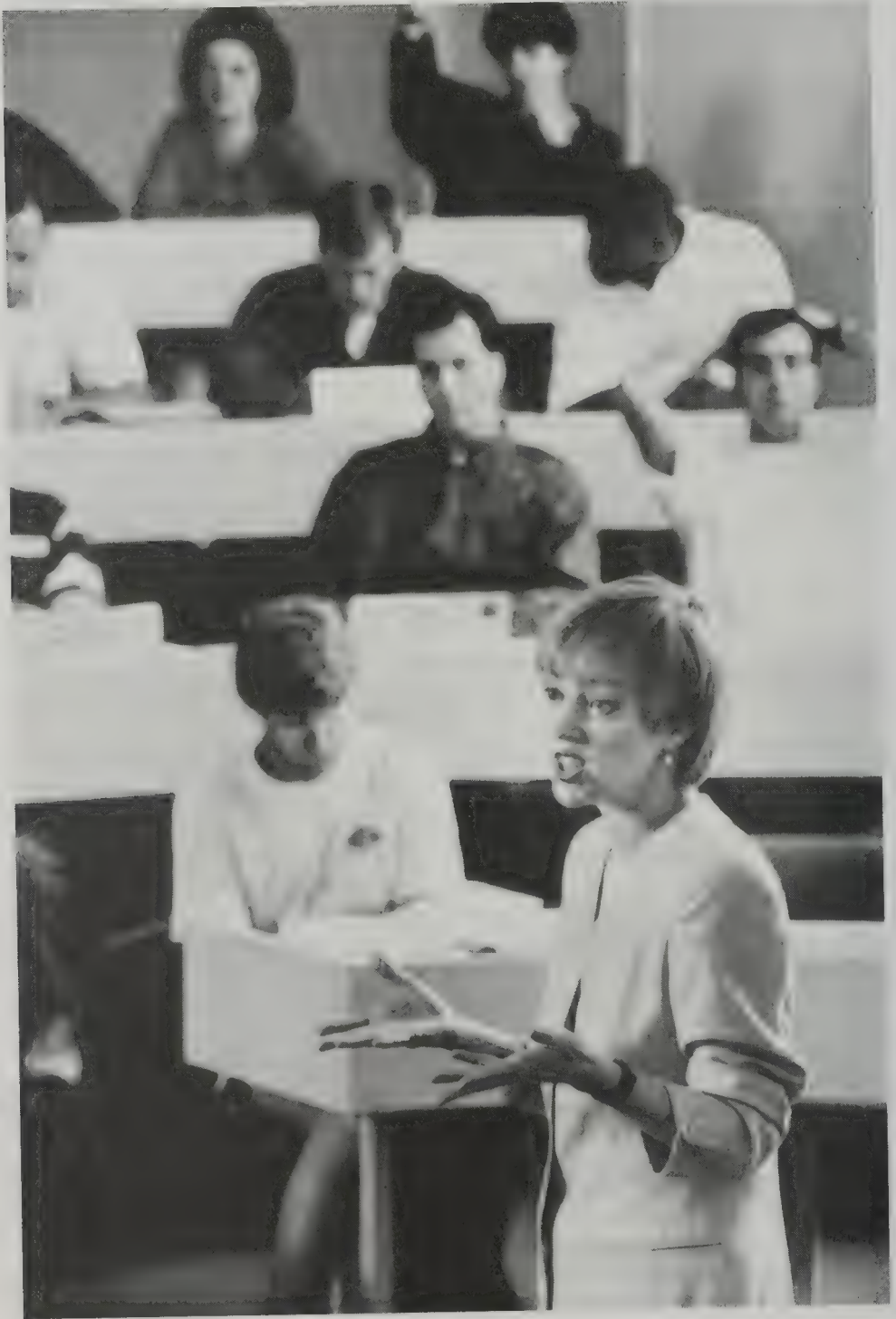
**597. Dissertation Research.** For students actively pursuing research on their dissertation. Credit to be arranged. Prerequisites: student must have passed the preliminary examination and have the consent of the director of the doctoral program and instructor. Variable credit. *Staff*

**598. Independent Study.** Allows the doctoral student the opportunity to engage in study or tutorial on special topics on an individual basis under the supervision of a faculty member. Credit to be arranged. Prerequisites: doctoral program standing and consent of the director of the doctoral program and instructor. Variable credit. *Staff*

**599. Directed Research.** Allows the doctoral student to engage in individual research projects under the supervision of a faculty member. Credit to be arranged. Prerequisites: doctoral program standing and consent of the director of the doctoral program and instructor. Variable credit. *Staff*

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## *Faculty*





## Faculty

The faculty of the Fuqua School of Business has developed a national reputation for both high quality teaching and research. One of the unique characteristics of this faculty is its diverse set of interests and professional backgrounds. Often an individual faculty member's interests will span two or three different areas of expertise. This diversity of interests ensures that the students will be exposed to wide-ranging views of the environment in which they will live and work after completing their educational experience.

The student-faculty ratio in the school is maintained at a level permitting development of close professional relationships and encouraging individual assistance in academic and professional relationships. Activities are planned which maximize student-faculty interaction. Some of these are career-related while others are more involved with research and teaching activities.

A brief description of the background and main areas of interest of the faculty follows:

**Yair Aharoni**, D.B.A., *J. Paul Sticht Visiting Professor of International Business*; B.A., M.A. (Tel Aviv University); D.B.A. (Harvard University).

Professor Aharoni is the Issachar Haimovic Professor (Emeritus) of Business Policy at Tel Aviv University. He has held appointments as visiting professor at Columbia, Stanford, Berkeley, and Boston University. He is the author of more than twenty-five books and monographs, more than seventy papers and book chapters, and over one hundred cases. His teaching and research interests lie in the areas of business policy and strategy, business and environment, international business, and comparative management. He serves on the editorial boards of *International Studies in Management* and *Journal of International Business Studies*, and is an associate editor of *Management Science* and *Organizational Science*, and is a Fellow of the Academy of International Business and the International Academy of Management.

**James J. Anton**, Ph.D., *Associate Professor of Business Administration*; B.S. (Emory University), Ph.D. (Stanford University).

Professor Anton works in the area of industrial organization and incentives. His recent work has addressed problems involving technology and intellectual property rights, including patents; procurement contracts and auctions; and regulation of markets. His teaching interests include microeconomics, macroeconomics, and industrial organization.

**Alison H. Ashton**, Ph.D., *Associate Professor of Business Administration*; B.S. (Louisiana State University), M.P.A., Ph.D. (The University of Texas at Austin).

Professor Ashton's academic interests are in behavioral decision theory and accounting. Her published research includes studies of auditors as decision makers, as well as managers as users of accounting information. Her current research focuses on health care professionals, including the cost of professional services (i.e., surgery and

medical education in a teaching hospital) and the impact of cost constraints on medical judgment and decision making.

**Robert H. Ashton**, Ph.D., CPA, *T. Austin Finch, Sr. Professor of Business Administration*; B.S. (Middle Tennessee State University), M.B.A. (Florida State University), Ph.D. (University of Minnesota).

Prior to joining the Duke faculty, Professor Ashton was on the faculties of New York University and the University of Texas at Austin, and he held a visiting position as the Winspear Foundation Professor at the University of Alberta. His principal research interests involve behavioral decision theory, especially as it relates to accounting and auditing issues. He also does research on the effectiveness and efficiency of external audits and other topics. He has published a book, a monograph, and numerous articles in leading journals. He serves on various editorial boards.

**Helmy H. Baligh**, Ph.D., *Professor of Business Administration*; B.A. (Oxford University), M.B.A., Ph.D. (University of California, Berkeley).

Professor Baligh joined the Duke faculty after teaching at the University of Illinois. His major research is in the analysis and design of economic structures for both business and social purposes. He has participated in the development of the Master of Business Administration programs at Duke and at the University of Illinois with emphasis on curriculum. His publications include *Vertical Market Structures* (with Leon E. Richartz) and several articles in the areas of transportation, hospital administration, marketing, economics, culture, and organization structure design. He teaches in the fields of marketing, economic decision making, organization design, and the cultural setting of business.

**Ravi Bansal**, Ph.D., *Associate Professor of Business Administration*; B.A., M.A. (University of Delhi), Ph.D. (Carnegie Mellon University).

Professor Bansal's interests are in financial economics, macroeconomics, time series analysis, and macroeconomics. The focus of his research is constructing and testing theories that provide a better understanding of asset price movements. His research is published in leading journals like the *Journal of Finance* and the *Journal of Econometrics*. He teaches courses in financial economics and aggregate economics.

**Maura A. Belliveau**, Ph.D., *Assistant Professor of Business Administration*; B.A. (Mount Holyoke College), M.S., Ph.D. (University of California at Berkeley).

Professor Belliveau's research addresses procedural fairness in organizations. Her recent work examines how human resource policy implementation, procedural fairness judgments, and career outcomes influence employee attitudes toward affirmative action. Her papers on procedural dimensions of negotiator effectiveness and social determinants of CEO compensation have been presented at the annual meetings of the Academy of Management.

**Messod Daniel Beneish**, Ph.D., *Associate Professor of Business Administration*; B.Comm. (Ecole Supérieure de Commerce de Reims), M.B.A., Ph.D. (University of Chicago).

Professor Beneish's teaching interests are in the area of financial accounting with a particular emphasis on the analysis of financial statements. His research investigates incentives, regulation, and capital markets. His current work focuses on agency problems between borrowers and lenders and on the detection of earnings manipulation.

**James R. Bettman**, Ph.D., *Burlington Industries Professor of Business Administration, Director of the Ph.D. Program*; B.A., M.Phil., Ph.D. (Yale University).

Prior to joining the Fuqua School of Business, Professor Bettman taught at the Graduate School of Management, University of California, Los Angeles. He is the author of *An Information Processing Theory of Consumer Choice* and *The Adaptive Decision Maker* as well as numerous articles in academic journals. Professor Bettman has served as a

consultant to government agencies, as a member of editorial boards of scholarly publications, as a participant in numerous forums, and as coeditor of the *Journal of Consumer Research*. His teaching interests are in consumer behavior and quantitative methods; his current research focuses on adaptive decision making and consumer behavior.

**Preston C. Bottger**, Ph.D., *Associate Professor of the Practice of Management*; B.E. (Hons), M.E., Ph.D. (University of New South Wales).

Professor Bottger is executive director of the Hartman Center for Midsized Company Management. He specializes in helping individuals and companies develop the capacities for strategy formulation and implementation. He is formerly of the Australian Graduate School of Management, University of New South Wales. There he was founding director of the Graduate Management Qualification, an M.B.A. course for engineers and scientists. He is the lead author of *Managing People* and has published many scientific articles on decision making, leadership, and motivation. Professor Bottger is on the editorial board of *Asia Pacific HRM*.

**William F. Boulding**, Ph.D., *Associate Professor of Business Administration*; B.A. (Swarthmore College), Ph.D. (University of Pennsylvania).

Professor Boulding is interested in model building relevant to managerial decision making. His current work focuses on the efficiency of various strategic options available to the firm. His teaching interests lie in the areas of marketing strategy and marketing management.

**Michael Bradley**, Ph.D., *F. M. Kirby Professor of Investment Banking*; A.B. (University of Idaho), M.B.A. (Syracuse University), Ph.D. (University of Chicago).

Prior to joining the Duke faculty, Professor Bradley was the Everett E. Berg Professor of Business Administration at the University of Michigan, where he also had an appointment in the Law School. He has served on the faculties of the Universities of Chicago and Rochester. Professor Bradley's teaching and research interests lie at the intersection of corporate finance and corporate law. He has published papers on corporate capital structure, mergers and acquisitions, takeover defenses and tactics, government regulation of the securities market, insider trading, fiduciary duties of corporate managers, corporate governance, and corporate bankruptcy. His work has been cited in textbooks, professional journals, and the decisions of numerous state and federal courts, including the United States Supreme Court.

**Douglas T. Breeden**, Ph.D., *Research Professor of Finance*; S.B. (M.I.T.), M.A., Ph.D. (Stanford University).

Prior to joining the Fuqua School of Business faculty, Professor Breeden taught at Stanford University, the University of Chicago, and M.I.T. Professor Breeden's teaching and research interests are in the area of banking, investments, futures, and options. He has published in the major finance journals and is associate editor of the *Journal of Finance*, and editor of the *Journal of Fixed Income*.

**Peter J. Brews**, Ph.D., *Assistant Professor of the Practice of Business Administration*; B. Comm., LL.B., H.Dip. (Company Law), (University of the Witwatersrand, Johannesburg), M.S.I.A. (Purdue University), Ph.D., (University of the Witwatersrand, Johannesburg).

Professor Brews teaches in the areas of strategic management and international business. His current research focuses on strategy formation in unstable environments. His early work investigated the challenges of achieving corporate growth through merger or acquisition. He consults internationally, assisting in firm level strategy formation processes, or designing and implementing management development programs for high potential employees of client firms, in the fields of international business, strategic management, and/or corporate finance.



**Susan E. Brodt**, Ph.D., *Assistant Professor of Business Administration*; A.B. (University of California, Berkeley), M.S., Ph.D. (Stanford University).

Professor Brodt's research concerns social perception and management decision behavior with specific emphasis on cognitive and social psychological processes involved in interpersonal conflict, negotiation, and human resource management decision making. She teaches courses on managerial effectiveness, bargaining and negotiation, and the applied global management course on Latin America.

**Richard M. Burton**, D.B.A., *Professor of Business Administration*; B.S., M.B.A., D.B.A. (University of Illinois).

Professor Burton's primary research interests are in the strategy, design, and management of organizations. He is currently developing the application of expert systems to organizational design. He teaches courses in organization design and management of professional service organizations. He is the program director for the Health Services Management Program at Fuqua and a departmental editor for *Management Science*.

**Gerard Cachon**, Ph.D., *Assistant Professor of Business Administration*; B.S., B.A.S., M.S., Ph.D. (University of Pennsylvania).

Professor Cachon's research interests are in operations management. He has current research projects in the areas of inventory management, supply chain coordination, logistics, and new product development. He teaches the core operations management course and an elective in supply chain management.

**Ziv Carmon**, Ph.D., *Assistant Professor of Business Administration*; B.Sc. (Technion, Israel Institute of Technology), M.S., Ph.D. (University of California at Berkeley).

Professor Carmon's research focuses on consumer decision making, on sales promotions, and on consumers' perceptions of the quality of products and services. He teaches the marketing management and consumer behavior courses.

**Kalman J. Cohen**, Ph.D., *Distinguished Bank Research Professor (Emeritus)*; B.A. (Reed College), M.Litt. (Oxford University), M.S., Ph.D. (Carnegie Institute of Technology).

Prior to joining the Duke faculty in 1974, Professor Cohen served for two years as Distinguished Professor of Finance and Economics and as the first director of the Salomon Brothers Center for the Study of Financial Institutions at New York University. He also spent fourteen years on the faculty of Carnegie Mellon University's Graduate School of Industrial Administration. He has written seven books and over eighty articles in the areas of banking and finance, strategic planning, economics, management science, and computer simulation. He has pioneered in the applications of management science techniques in banking. His current research focuses on the microstructure of security markets.

**Robert T. Clemen**, Ph.D., *Professor of Business Administration*; B.A. (Stanford University), M.B.A. (University of Colorado, Colorado Springs), Ph.D. (Indiana University).

Professor Clemen has held positions as associate professor of decision sciences at the University of Oregon and senior researcher at Decision Sciences Research Institute in Eugene, Oregon. He is also currently a senior scientist with Applied Decision Analysis, Inc., of Menlo Park, CA. His interests include both practical and theoretical aspects of decision analysis, negotiations, and the use of experts for risk assessment and long-range forecasting.

**John Coleman**, Ph.D., *Assistant Professor of Business Administration*; B.A. (University of Wisconsin), Ph.D. (University of Chicago).

Professor Coleman's interests are in macroeconomics, monetary and fiscal policy, and financial economics. The focus of his research is constructing and testing theories of real, monetary, and financial variables. He teaches courses in macro and monetary economics.

**Robert M. Dammon**, Ph.D., *Visiting Associate Professor of Business Administration*; Ph.D., M.B.A., B.S. (University of Wisconsin).

Professor Dammon is visiting from Carnegie Mellon University. He has interests in corporate finance, asset pricing, and taxes. His current research involves the study of the trading and pricing of financial assets in the presence of capital gains taxes and the study of managerial compensation and corporate financial policy. He teaches financial management and corporate restructuring.

**Philippe Delqu  **, Ph.D., *Visiting Assistant Professor of Business Administration*; B.S. (Ecole National des Travaux Publics de l'Etat, Lyon, France), M.S., Ph.D. (Massachusetts Institute of Technology).

Philippe Delqu   is assistant professor of management science and information systems in the Graduate School of Business at the University of Texas at Austin. He teaches courses in decision analysis, utility theory, and management science. His research interests are in decision analysis, risky choice behavior, and the quantification of preferences.

**Gerardine DeSanctis**, Ph.D., *Professor of Business Administration*; B.A. (Villanova University), M.A. (Fairleigh Dickinson University), Ph.D. (Texas Tech University).

Professor DeSanctis' interests are in the general areas of organizational computing, computer supported cooperative work, and management of information systems. Her current work focuses on the design and impacts of electronic communication systems and groupware. She is studying the ways in which information technology enables change in how companies organize work tasks, enable communication, learn, and make decisions. Prior to moving to the Fuqua School of Business she was a professor of business administration at the University of Minnesota. She currently serves as senior editor for the *Management Information Systems Quarterly*, senior editor of organizational communication for *Organization Science*, and advisory board member for *Information Systems Research*.

**Mark D. Dibner**, Ph.D., *Adjunct Associate Professor of Business Administration*; B.A. (University of Pennsylvania), M.B.A. (Widener College), Ph.D. (Cornell University).

Professor Dibner received his B.A. in psychology and physiology, his M.B.A. in strategic planning, and his Ph.D. in neurobiology and behavior. He is currently president of the Institute for Biotechnology Information, L.L.C. His primary research interest is the biotechnology industry, and he teaches in the areas of entrepreneurship and management of technology. He has written or edited seven books on the U.S. or Japanese biotechnology industries, serves on two editorial boards, and is on the Board of Directors of the Biotechnology Industry Organization and EnSolve Biosystems, Inc.

**Bernard Dumas**, Ph.D., *Research Professor of Business Administration*; B. Engineering (Ecole Centrale de Paris), M.S., Ph.D. (Columbia University).

Professor Dumas is also a professor of finance at the H.E.C. School of Management in France. Prior to joining the Fuqua School of Business faculty as research professor, he served as professor of finance at the Wharton School of the University of Pennsylvania. He has also been a visiting professor at Columbia University and at the University of California at Berkeley. He has published in the area of international finance. Professor Dumas has been an associate editor of *Journal of International Business Studies* and *Journal of Banking and Finance* and is currently an associate editor of *European Economic Review* and the *Review of Financial Studies*.

**Julie A. Edell**, Ph.D., *Associate Professor of Business Administration*; B.A. (University of Nebraska), M.S., Ph.D. (Carnegie Mellon University).

Professor Edell's teaching interests are in the area of marketing, with emphasis on advertising, marketing management, consumer behavior, and marketing research. Her current research is concerned with examining the effect of advertising communications upon

consumer purchase behavior. Her work has appeared in the *Journal of Consumer Research* and *Journal of Marketing Research*.

**Gregory W. Fischer**, Ph.D., *Professor of Business Administration*; B.A., M.A., Ph.D. (University of Michigan).

Professor Fischer's research focuses on individual judgment and decision making and cognitive aspects of social behavior. His teaching interests are in managerial decision making, decision analysis, and managerial effectiveness.

**Nanette Fondas**, D.B.A., *Visiting Professor of Business Administration*; A.B. (Cornell University), M.Phil. (Oxford University), D.B.A. (Harvard Business School).

Professor Fondas specializes in strategic and organizational problems, with special attention to the changing role of the manager. Her current research is on top management, boards' influence on strategic decisions, and the contemporary discourse on managerial work. She teaches corporate strategy and international strategy.

**John D. Forsyth**, D.B.A., *Professor of Business Administration*; B.A. (Queen's University), M.B.A. (University of Detroit), D.B.A. (University of Illinois).

Prior to coming to Duke, Professor Forsyth was professor of business administration and director of the Program for Executive Development at IMEDE Management Development Institute in Lausanne, Switzerland. His teaching and research interests are in the areas of corporate finance and corporate strategy.

**F. Douglas Foster**, Ph.D., *Visiting Associate Professor for Business Administration*; B. Comm. (University of Alberta), M.S., Ph.D. (Cornell University).

Professor Foster is interested in financial intermediation, capital market theory, and international finance. His current research is in investment banking, the microfoundations of trading and corporate control. He teaches investment banking and international finance.

**Eric J. Friedman**, Ph.D., *Assistant Professor of Business Administration*; A.B. (Princeton University), M.A., M.S., Ph.D. (University of California at Berkeley).

Professor Friedman's teaching interests lie in the areas of statistics and management science. His research focuses on the application of game theory to problems in decentralized decision making and dynamic processes.

**Anil Gaba**, Ph.D., *Visiting Associate Professor of Business Administration*; B.A. (St. Stephen's College, Delhi University), Ph.D. (Duke University).

Anil Gaba is associate professor of Decision Sciences at INSEAD, Fontainebleau, France. He teaches courses in applied statistics, decision analysis, and Bayesian analysis. His research interests are in decision theory, Bayesian statistics, and forecasting.

**John P. Gallagher**, Ph.D., *Professor of the Practice of Business Computing*; B.A. (University of California, Berkeley), Ph.D. (University of California, Santa Barbara).

Professor Gallagher has extensive teaching experience in computer applications to education and problem solving. His research and teaching interests lie in the areas of computer application in support of managerial decision making, computer applications in marketing and sales, and instructional psychology.

**Stephen F. Gray**, Ph.D., *Assistant Professor of Business Administration*; B.Com., L.L.B. (Queensland), Ph.D. (Stanford).

Professor Gray's research interests include econometrics and asset pricing, in particular modeling nonlinearities in financial time series. His recent work has focused on the application of regime-switching models to domestic interest rates, and on modeling the effects of central bank intervention on interest rates, exchange rates, and derivative securities.



**Campbell R. Harvey**, Ph.D., *Associate Professor of Business Administration and Area Coordinator for Finance*; B.A. (University of Toronto), M.B.A. (York University, Toronto), Ph.D. (University of Chicago).

Professor Harvey's primary area of research is investments. His work focuses on asset pricing models that allow for expected returns and risks to change through time. His research investigates the link between the business cycle and changing risk. He has published in the *Journal of Political Economy*, *Journal of Finance*, *Review of Financial Studies*, and the *Journal of Financial Economics*. He teaches courses in financial management and investment analysis.

**Geraldine R. Henderson**, Ph.D., *Assistant Professor of Business Administration*; B.S.E.E. (Purdue University), M.M., Ph.D. (Northwestern University).

Professor Henderson's primary area of research is the quantification of qualitative consumer data in the form of cognitive and social networks. Her current research focuses on the elicitation and representation of consumer brand associations. Other related research interests include the study of source credibility, word-of-mouth, and rumor. She has worked in relationship marketing at IBM and in brand management at Kraft General Foods. Her teaching interests lie in the areas of product management, consumer behavior, ethnic marketing, and new products.

**David A. Hsieh**, Ph.D., *Professor of Business Administration*; B.S. (Yale University), Ph.D. (Massachusetts Institute of Technology).

Prior to joining the Fuqua School of Business, Professor Hsieh taught at the Graduate School of Business, University of Chicago for eight years. His primary area of research is nonlinear dynamics in economics and finance, with a particular emphasis on empirical applications in risk management. He teaches international finance and money and capital markets.

**Joel C. Huber**, Ph.D., *Professor of Business Administration*; B.A. (Princeton University), M.B.A., Ph.D. (University of Pennsylvania).

Professor Huber came to the Fuqua School from the Columbia University School of Business and the Krannert Graduate School of Management, Purdue University. His teaching interests include industrial marketing, product marketing, and corporate strategy. His current research has focused on the use of computer-based interviewing to assess consumer reactions to promotions, price differences, and external quality ratings.

**Steven J. Huddart**, Ph.D., *Associate Professor of Business Administration*; B.Math. (University of Waterloo), M.A., M.Phil., and Ph.D. (Yale University).

Professor Huddart teaches managerial accounting and tax planning. His research interests include the effect of ownership structure on corporate value; the cost of employee stock options; the role of stock options in compensation, tax planning, and financial reporting; and the effects of taxation, reputation, and performance fees on portfolio choice by investment advisors. He has also published cases on indirect cost allocation and the taxation of a corporate acquisition. Before coming to Fuqua, he taught at Stanford and Michigan.

**John (Jack) S. Hughes**, CPA, Ph.D., *Professor of Business Administration and Area Coordinator for Accounting*; BSBA (Northeastern University), M.S. (University of Massachusetts), Ph.D. (Purdue University).

Professor Hughes has had faculty appointments at Western New England College, Dartmouth College, University of British Columbia, (Arthur Andersen Alumni Professor) and University of Minnesota (Curtis Carlson Chair in Accounting). He has taught courses in financial and managerial accounting. His research includes theoretical and empirical inquiries into a wide range of issues relating principally to financial control, incentive contracting, industrial organizations, and capital markets. He has served as an associate editor for the *Accounting Review*, *Contemporary Accounting Research*, and the

*Journal of Accounting and Economics*, and is presently editor-in-chief of the *Review of Accounting Studies*.

**Ronan Israel**, Ph.D., *Visiting Associate Professor of Business Administration*; B.A. (University of Haifa), Ph.D. (Northwestern University).

Professor Israel is an associate professor of finance at Carnegie Mellon University and was previously at the University of Michigan. His research is in corporate finance involving the economics of the market for corporate control, firms' capital structure choice, managerial compensation, and the economics of bankruptcy. He is associate editor of the *Journal of Corporate Finance*. He has taught a variety of financial management and corporate finance courses in the undergraduate, master, Ph.D., and executive education programs.

**Simon Johnson**, Ph.D., *Assistant Professor of Business Administration*, B.A. (University of Oxford); M.A. (University of Manchester), Ph.D. (Massachusetts Institute of Technology).

Professor Johnson studies economic reform in Eastern Europe and the former Soviet Union. Before coming to Duke, he was a junior scholar at the Academy for International and Area Studies and a fellow at the Russian Research Center at Harvard University. Professor Johnson teaches courses in economics and international business.

**Toby Y. Kahr**, Ph.D., *Adjunct Associate Professor of Business Administration*; B.S. (Columbia University), M.A., Ph.D. (University of Illinois).

Professor Kahr is associate vice-president and director of Duke University Human Resources. Before coming to Duke he served as director of personnel services at the University of Illinois and worked for Ford Motor Company in personnel administration. Professor Kahr teaches courses in human resources management and power in organizations.

**Thomas F. Keller**, Ph.D., CPA, *R. J. Reynolds Professor of Business Administration and Dean*; A.B. (Duke University), M.B.A., Ph.D. (University of Michigan).

Professor Keller specializes in accounting. His current research and teaching interests are principally in the areas of financial accounting and reporting. He has held several offices in the American Accounting Association, including editor of the *Accounting Review* (1972-75). He is the coauthor and coeditor of several books in financial accounting. During the summer and fall of 1975, under the auspices of a Fulbright grant, he lectured in Australia and the Far East on a variety of topics related to the development of accounting theory and standards. He is currently a director of the American Business Products, Inc., DIMON, INC., Hatteras Income Securities, Inc., LADD Furniture, Inc., Mebane Packaging Group, Mentor Series Trust, Nations Funds, Inc., North Carolina Center for World Languages and Cultures, and Wendy's International, Inc. He is a former director of the American Assembly of Collegiate Schools of Business, the national accrediting agency for business schools and is former chairman of the RTP World Trade Center. He has served as dean of the Fuqua School of Business since 1974.

**Panagiotis (Panos) Kouvelis**, Ph.D., *Associate Professor of Business Administration*, B.S.M.E. (National Technical University of Athens), M.B.A., M.I.S.E. (University of Southern California), Ph.D. (Stanford University).

Professor Kouvelis is studying a broad range of problems including global operations management, marketing/manufacturing interfaces, design and planning issues of flexible manufacturing systems and electronic assembly lines, layout design, operating room scheduling in hospital environments, cyclic scheduling, product design and its interface with operations management decisions, and strategic aspects of quality management. Prior to moving to the Fuqua School of Business he was on the faculty of the management department at the University of Texas.

Professor Kouvelis teaches courses in operations management, manufacturing strategy, and international operations management.

**Albert (Pete) Kyle**, Ph.D., *Associate Professor of Business Administration*; B.S. (Davidson College), B.A. (Merton College, Oxford University), Ph.D. (University of Chicago).

Professor Kyle teaches courses in corporate finance and information economics. Before coming to the Fuqua School, he taught at the University of California at Berkeley and the Woodrow Wilson School, Princeton University. His research interests are in the area of information economics with emphasis on the trading process and price information.

**Martin A. Lariviere**, Ph.D., *Assistant Professor of Business Administration*; B.A. (Yale University), Ph.D. (Stanford University).

Professor Lariviere's research interests are in operations management, focusing on new product development, supplier relations, and the marketing-manufacturing interface. His recent work has concerned optimal stocking and pricing under uncertain demand. He teaches the core operations management course and electives in operations management.

**Dan J. Laughhunn**, D.B.A., *Professor of Business Administration*; B.S., M.B.A., D.B.A. (University of Illinois).

Professor Laughhunn has served as a consultant to industry and universities on a variety of topics related to planning and budgeting. His teaching and research interests deal with the application of quantitative techniques to problems in production and finance. Professor Laughhunn also has been actively engaged in teaching executive development programs, both at Duke and at other universities.

**Katherine N. Lemon**, Ph.D., *Assistant Professor of Business Administration*; B.A. (Colorado College), M.B.A. (Wichita State University), Ph.D. (University of California, Berkeley).

Professor Lemon's primary area of research is customer retention. Her work focuses on determining the factors which influence a customer's decision to disadopt a product or service. She also has interests in consumer decision making and the marketing of services. Her teaching interests lie in the areas of marketing management, services marketing, and database marketing.

**Arie Y. Lewin**, Ph.D., *Professor of Business Administration*; B.S., M.S. (University of California, Los Angeles), M.S., Ph.D. (Carnegie Mellon University).

Professor Lewin's overall research interests involve the analysis of organizational effectiveness and the design of organizations. His current research involves the organization design of flexible, learning, entrepreneurial organizations; individual properties of General Manager as determinants of strategic direction, and preferences for organization design; and implications of advanced computer mediated communication technologies for new organization forms. He is presently engaged in a multi-year Japan, Germany, U.S.A. comparative study of organization transitions. He has served as director of the Decision, Risk, and Management Science Program and NSF and is founding editor-in-chief of *Organization Science*.

**Wei Li**, Ph.D., *Assistant Professor of Business Administration*; B.S. (Jiaotong University), Ph.D. (University of Michigan).

Professor Li studies economic reform in China, Eastern Europe, and the former Soviet Union. He also does research on the functioning of market and nonmarket institutions in economies characterized by inter-industry or inter-regional dependence. He teaches courses in economics and international business.

**Patricia W. Linville**, Ph.D., *Associate Professor of Business Administration*, B.A. (Florida Southern College), Ed.M. (Harvard University), Ph.D. (Duke University).

Prior to coming to Duke, Professor Linville was a faculty member in the Department of Psychology at Yale University. Her research area is social cognition, focusing



on social judgment and decision making, stereotyping and intergroup relations, and negotiation.

**John M. McCann**, Ph.D., *Professor of Business Administration*; B.S.M.E., M.B.A. (University of Kentucky), Ph.D. (Purdue University).

Professor McCann has taught at Cornell, the University of California at Berkeley, and has been a visiting professor at the University of Oregon. He has worked as an engineer and as a managing consultant at Data Resources, Inc. He founded and directed the Marketing Workbench Laboratory, a large research center that pioneered the use of expert systems in marketing and merchandising, at the Fuqua School. His current teaching involves courses in managerial informatics and marketing on the Internet and his research involves the development of methods for generating insights from market data, along with the subsequent management of those insights.

**Kevin F. McCardle**, Ph.D., *Associate Professor of Business Administration and Area Coordinator for Decision Sciences*; B.S. (Marquette University), M.A., Ph.D. (University of California, Los Angeles).

Professor McCardle's teaching interests lie in the area of probability and statistics, decision models, and quality control. His research involves sequential decision theory, game theory and its applications, and models of R&D.

**J. Alexander McMahon**, *Executive in Residence*; B.A. (Duke University), J.D. (Harvard University).

Before joining the Fuqua faculty, Mr. McMahon was chairman of the Department of Health Administration in the Duke Medical Center. He conducts two seminars in the Health Services Management Program, and advises students interested in careers in health services organizations. He was formerly chairman of the Board of Trustees of Duke University, president of the American Hospital Association, president of Blue Cross and Blue Shield of North Carolina, and professor of public law and government at the University of North Carolina, Chapel Hill.

**Wesley A. Magat**, Ph.D., *Professor of Business Administration, Senior Associate Dean for Academic Programs, and Director of the Center for the Study of Business, Regulation, and Economic Policy*; A.B. (Brown University), M.S., Ph.D. (Northwestern University).

Professor Magat teaches primarily in the fields of managerial economics and regulatory management. He is currently involved in research in the areas of environmental, risk, and information regulation. He is the author or coauthor of four books, and his papers have appeared in numerous academic journals.

**Laureen A. Maines**, Ph.D., *Associate Professor of Business Administration*; B.S., M.B.A. (Indiana University) M.B.A., Ph.D. (University of Chicago).

Professor Maines' research interests focus on the use of accounting information for decision making purposes. Her current research examines various aspects of consensus forecasts of accounting variables. Her teaching interests include both managerial and financial accounting. Professor Maines has taught accounting at Indiana University and the University of Chicago and was a small business consultant with Deloitte Haskins & Sells.

**Joseph B. Mazzola**, Ph.D., *Associate Professor of Business Administration*, B.S. (State University of New York at Stony Brook); M.A. (Wake Forest University); M.S., Ph.D. (Carnegie Mellon University).

Professor Mazzola's teaching and research interests are in the areas of production/operations management, management science, and operations research. His current research involves topics arising in automated manufacturing, operations scheduling, production and inventory control, and mathematical programming. Prior to coming to Duke, Professor Mazzola served on the faculty of the University of North Carolina at Chapel Hill.

**Marian Chapman Moore**, Ph.D., *Associate Professor of Business Administration*; B.A. (College of William and Mary), M.S. (Virginia Commonwealth University), Ph.D. (University of California, Los Angeles).

Professor Moore's teaching interests include marketing strategy and planning, competitive analysis, and strategic relationships. Her current research activities are focused on understanding how managers learn about their competitors and factor that information into their own decision making, and on issues of advertising effectiveness.

**Michael J. Moore**, Ph.D., *Associate Professor of Business Administration*; B.S. (Boston College), M.B.A. (Babson College), M.S., Ph.D. (University of Michigan).

Professor Moore's research interests are primarily in the areas of health and safety regulation. He has received the best article award from *Economic Inquiry*, the Kulp-Wright award for the best book in risk and insurance in 1990, and the Kenneth Arrow Award for the best paper in health economics in 1993. Professor Moore is currently studying the effects of product liability risk on innovation, alcohol abuse on productivity, alcohol and tobacco regulation on health, and the economics of chronic disease. His teaching interests are in microeconomics, health policy, and econometrics. He is also an associate professor of public policy in the Terry Sanford Institute of Public Policy at Duke, a research associate at the National Bureau of Economic Research, and a senior fellow in the Center for Aging and Human Development in the Medical Center.

**Robert F. Nau**, Ph.D., *Associate Professor of Business Administration*; B.A. (University of California at San Diego), M.S., Ph.D. (University of California at Berkeley).

Professor Nau's research interests include the mathematical foundations of decision theory and game theory and their applications in economics and finance. Prior to coming to the Fuqua School, Professor Nau taught at Tulane University and served as manager of information systems at Liberty Mutual Insurance Company. He has taught courses in management science, computers and information systems, and statistical forecasting.

**Pierre C. Ndilikilikisha**, Ph.D., *Assistant Professor of Business Administration*; B.S., M.S. (Odessa State University), Ph.D. (University of Kansas).

Professor Ndilikilikisha's research interests lie at the interface between management science, decision analysis, and artificial intelligence. He is currently working on influence diagrams and their applications in expert systems design. His teaching interests include management science, decision analysis, and expert systems.

**Gwen Ortmeyer**, Ph.D., *Associate Professor of the Practice of Business Administration*, B.S. (University of California at Berkeley), Ph.D. (Stanford University).

Professor Ortmeyer's teaching interests include marketing strategy and planning, competitive analysis, and retailing. Prior to coming to the Fuqua School, she taught at Columbia's Graduate School of Business and the Harvard Business School. She is active in executive education and consulting to a variety of organizations. Professor Ortmeyer's research activities focus on retailing issues such as channel partnerships and retail pricing strategy.

**John W. Payne**, Ph.D., *Joseph J. Ruvane, Jr. Professor of Business Administration, Area Coordinator for Management and Director of the Center for Decision Studies*; B.A., M.A., Ph.D. (University of California, Irvine).

Prior to coming to Duke, Professor Payne was on the faculty of the Graduate School of Business at the University of Chicago. His primary research activities deal with individual decision behavior. He has investigated decision making under risk, consumer choice behavior, and the design of computer-based support systems. He teaches courses in decision theory, organizational behavior, and consumer behavior.

**Tod M. Powers, Ph.D.,** *Adjunct Assistant Professor of Business Administration*; B.A. (Duke University), M.S., Ph.D. (North Carolina State University).

Dr. Powers' interests and expertise are in marketing research. As president of PG Research, Inc., he has conducted a broad array of qualitative and quantitative studies for clients in telecommunications, food service, healthcare, advertising, finance, and public utilities. His formal training is in social psychology, statistics, and consumer behavior.

**Robert M. Price,** *Executive in Residence*; B.S. (Duke University), M.S. (Georgia Institute of Technology).

Mr. Price is president of PSV, Inc., a management consulting firm specializing in assistance to start up companies and to improving the utilization and commercialization of technology. He is the retired chairman of the board and chief executive officer of Control Data Corporation, Minneapolis, Minnesota. Currently Mr. Price is involved in quality, U.S. technology policy, and educational issues. He is on the boards of directors of several firms and is fellow of the International Academy of Management and a member of the board of the Center for International Leadership. He is also chairman of the board of the Alpha Center for Social Entrepreneurs.

**Robert E. Reinheimer, Ph.D.,** *Professor of the Practice of Management*; B.A., M.A. (California State University, Fullerton), Ph.D. (University of Kansas).

Professor Reinheimer came to the Fuqua School from the University of Virginia. His primary areas of interest are negotiation, persuasion strategy, task group effectiveness, and communication. He has taught a number of courses and executive development programs in these areas, and was responsible for the development of the management communication courses in the M.B.A. and Executive M.B.A. programs.

**Mark C. Rogers,** *Adjunct Professor of Business Administration*; B.A. (Columbia University), M.D. (State University of New York), M.B.A. (University of Pennsylvania).

Dr. Rogers is vice-chancellor for Health Affairs of Duke University Medical Center and executive director and chief executive officer of Duke Hospital. Prior to coming to Duke, he was at The Johns Hopkins Hospital, where he was director of the Pediatric Intensive Care Unit, professor of pediatrics, Distinguished Faculty Professor, and chairman of the Department of Anesthesiology and Critical Care Medicine, as well as associate dean for Clinical Practice. His teaching interests at the Fuqua School involve strategic management for health services.

**Jane E. Salk, Ph.D.,** *Assistant Professor of Business Administration*; B.A. (University of Chicago), M.A. (University of North Carolina), Ph.D. (Massachusetts Institute of Technology).

Professor Salk's current research encompasses the sociological and group development aspects of international shared management joint venture teams. She has also done work on mergers and acquisitions and has done clinical research in West German businesses. In 1989-90 she was a Fulbright Scholar at the University of Cologne and has also received recognition and support by Marketing Science Institute and as a Kenan Fellow.

**William A. Sax,** *Executive in Residence*; B.S. (St. Louis University).

Mr. Sax teaches strategic business planning for midsize business and consulting for small business. He worked for thirty-six years in the oil industry, the last thirty-one years with Unocal Corporation (formerly Union Oil Company of California) where he was vice-president of international oil and gas exploration.



**David A. Schkade**, Ph.D., *Visiting Associate Professor of Business Administration*; B.A., M.B.A. (University of Texas, Austin), M.S., Ph.D. (Carnegie Mellon University).

Professor Schkade is on sabbatical leave from the University of Texas, Austin, where he is William W. Spriegel Centennial Fellow. His research interests include the psychology of judgment and decision making, consumer choice, intuitive forecasting, and valuation of environmental resources. He teaches negotiation, decision analysis, research methods, probability and statistics, and cognitive science.

**James E. Sheldon**, L.L.M. *Adjunct Assistant Professor of Business Administration*; B.A. (Dartmouth College), J.D. (University of California), L.L.M. (Boston University Law School), L.L.M. (University of Stockholm).

Before joining the Fuqua School of Business, Mr. Sheldon practiced corporate, securities, and tax law for seven years in Boston and San Francisco. His teaching and research interests include business and tax planning. He is a principal of the Synertech Group, a new venture development firm, and is a member of the California, Massachusetts, and North Carolina Bar Associations.

**Blair H. Sheppard**, Ph.D., *Professor of Business Administration and Associate Dean for Executive Education*; B.A., M.A. (University of Western Ontario), Ph.D. (University of Illinois).

Professor Sheppard teaches in the area of organizational behavior. His interests generally relate to the broad topic of managing relationships with organizations. Specific research interests include conflict management, motivation, justice, negotiation, group performance, and employee attitudes. He has published articles on all of these topics in a range of business and psychology journals and is coeditor of an annual series entitled "Research on Negotiation in Organizations." His professional activities include executive education and consulting for a variety of organizations and active participation in professional associations.

**Sim B. Sitkin**, Ph.D., *Associate Professor of Business Administration*; A.B. (Clark University), Ed.M. (Harvard University), Ph.D., (Stanford University).

Professor Sitkin's research focuses on the effect of formal and informal organizational control systems on risk taking, accountability, trust, learning, and innovation. His teaching interests include organizational behavior, organizational control, and the management of organizational change. His co-edited book, *The Legalistic Organization*, was published in 1994. He currently serves on the editorial boards of *Academy of Management Review* and *Organization Science*. His consulting and executive development work has included a number of large and small corporations in the office equipment, natural resources, transportation, publishing, and hospitality industries.

**Charles J. Skender**, M.B.A., CPA, *Visiting Assistant Professor of Business Administration*; B.S. (Lehigh University), M.B.A. (Duke University).

Professor Skender has attained nine professional designations in accounting, financial planning, insurance, and management. He has served as a training consultant to Wells Fargo Bank and IBM. He previously worked on the audit staff of Deloitte Haskins & Sells. Professor Skender has received teaching awards at Fuqua and at North Carolina State University. He was presented the NCACPA Foundation's Outstanding Educator Award in 1995.

**Frank A. Sloan**, Ph.D., *J. Alexander McMahon Professor of Health Policy and Management*; B.A. (Oberlin College), Ph.D. (Harvard University).

Prior to coming to Duke, Professor Sloan was a member of the faculty of the economics department at Vanderbilt University. His primary research interest is health economics. He has studied many facets of medical malpractice, hospitals, physicians' services, families' decisions about long-term care, pharmaceuticals, drinking and driving and cost effectiveness analysis of medical technologies.

**Paula R. Sloan**, *Adjunct Associate Professor*, B.A. (City University of New York), M.A.T. (Harvard University), M.S. (University of California at Los Angeles).

Professor Sloan is known for her development of programs to help adults overcome math anxiety, and for her development of academic support programs for mid-career business people returning to academe. Prior to coming to Duke, she served on the faculty of The Owen Graduate School of Management at Vanderbilt University.

**James E. Smith**, Ph.D., *Associate Professor of Business Administration*; B.S., M.S., Ph.D. (Stanford University).

Professor Smith's research interests are primarily in the area of probabilistic modeling and decision analysis, focusing on tools and methods for representing decision problems and techniques for valuing risky projects. At Fuqua, Professor Smith teaches courses in probability, statistics, and decision analysis.

**Harris Sondak**, Ph.D., *Associate Professor of Business Administration*; B.A. (University of Colorado); M.S., Ph.D. (Northwestern University).

Professor Sondak teaches negotiations and business ethics courses. His research investigates allocation procedures and decisions in various contexts including two-party and multi-party negotiations. His research has been published in *Negotiation Journal*, *Group Decision and Negotiation*, *Organizational Behavior and Human Decision Processes*, and *Research on Negotiation in Organizations*.

**Richard Staelin**, Ph.D., *Edward and Rose Donnell Professor of Business Administration and Area Coordinator for Marketing*; B.S., M.B.A., Ph.D. (University of Michigan).

Prior to joining Duke's faculty, Professor Staelin served as professor and associate dean at the Graduate School of Industrial Administration, Carnegie Mellon University. He was also a visiting professor at the Australian Graduate School of Management and at the University of Chicago. His professional activities include consulting work for both the public and private sectors, executive director of Marketing Science Institute, and publication of a book and over fifty journal articles. He was Fuqua's associate dean for faculty for eight years and is currently the editor of *Marketing Science*. Professor Staelin's current research interests include information search, channel management, and strategy formulation.

**James H. Vander Weide**, Ph.D., *Research Professor of Business Administration*; B.S. (Cornell University), Ph.D. (Northwestern University).

Professor Vander Weide's primary research and teaching interests are in the areas of corporate finance and managerial economics. He has written papers on topics such as capital budgeting, cash management, and the economic effects of government regulation. He has also served as a consultant on financial and economic issues to firms in electric, natural gas, water, telecommunications, and insurance industries; and he has testified as an expert witness on financial and economic issues.

**Nikolaos Vettas**, Ph.D., *Assistant Professor of Business Administration*; B.A. (University of Athens), M.A., Ph.D. (University of Pennsylvania).

Professor Vettas teaches courses in microeconomics, managerial economics, and competitive analysis and strategy. His research interests are in the areas of industrial organization, information and learning, game theory, and international trade. His current work focuses on innovations and industry dynamics under uncertainty.

**S. Viswanathan**, Ph.D., *Associate Professor of Business Administration*; B.S., M.M.S. (University of Bombay), Ph.D. (Northwestern University).

Professor Viswanathan teaches corporate finance. His major research interests are corporate finance, market microstructure, and nonlinear asset pricing. His prior research has focused on the relationship between volume and volatility on the stock exchange and has been published in the *Journal of Business*, *Journal of Finance* and *Review of Financial Studies*. Currently, he is working on a study of foreign stock exchanges.

**Wanda T. Wallace, Ph.D.,** *Associate Professor of Business Administration; B.A., M.A.T., Ph.D. (Duke University).*

Professor Wallace's general research interests involve consumer memory of advertising and products. Specifically, she is examining the effect of music on consumer memory for an advertisement and on emotional reaction to an advertisement. Her teaching interests include marketing management, consumer behavior, marketing of services, and team development.

**James J. D. Wang, Assistant Professor of Business Administration; B.S. (Univ. Sci. and Tech., China), M.S. (New York University), Ph.D. (Utah).**

Professor Wang works in areas of corporate finance and managerial economics. His recent research interests include applying auction theory to the U.S. Treasury securities market and examining the role of stock-based compensation for aligning the interests of management with those of shareholders.

**Klaus Wertenbroch, Ph.D.,** *Assistant Professor of Business Administration; B.A. (University of Mainz), M.A. (University of Darmstadt), M.B.A., Ph.D. (University of Chicago).*

Professor Wertenbroch's research interests focus on behavioral and marketing decision making and preference inconsistencies, especially on how consumers develop and manage their preferences over time. For example, he uses experimental and scanner data to examine consumer self-control and its marketing implications, particularly for pricing and product policies. He teaches international marketing and a study tour course which provided in-depth knowledge of doing business in and with Europe. His other teaching interests include advertising, consumer behavior, and marketing management.

**Robert E. Whaley, Ph.D.,** *T. Austin Finch Foundation Professor of Business Administration, Director of the Futures and Options Research Center; B. Comm. (University of Alberta), M.B.A., Ph.D. (University of Toronto).*

Prior to joining the Fuqua School of Business faculty, Professor Whaley taught at Vanderbilt University, the University of Alberta, and the University of Chicago. He also served as vice president-research GNP Consulting in Chicago and as director of the Institute for Financial Research at the University of Alberta. Professor Whaley's research interests are currently in the area of market volatility, financial futures and options, and market micro-structure. He has published numerous articles in finance, business, and accounting journals, has published six books, including a textbook on the theory and applications of futures and option contracts, is coeditor of the *Review of Futures Markets*, and is associate editor for *Advances in Futures and Options Research*, *Journal of Derivatives*, *Journal of Financial Economics*, and *Journal of Finance*.

**Andrew B. Widmark, J.D.,** *Professor of the Practice of Real Estate; B.S. (Fairleigh Dickinson University), M.B.A. (University of Pennsylvania), J.D. (Rutgers University).*

Mr. Widmark teaches a course in fundamentals of real estate and a course in urban revitalization. He is president of Mark Realty Corp. which owns and manages shopping centers and office buildings throughout nine states. He previously practiced law in New Jersey and has taught estate planning courses at the Rutgers University School of Law.

**Peter R. Wilson, Ph.D.,** *Associate Professor of the Practice of Business Administration; B.A. (University of North Carolina at Chapel Hill); M.B.A. (University of North Carolina at Greensboro); Ph.D. (University of North Carolina at Chapel Hill).*

Professor Wilson teaches in the areas of financial accounting and financial statement analysis. His research interests are in behavioral decision theory, auditor decision making, and the use and interpretation of financial statement information. His current research includes examining the effect of auditors' risk preferences on their decision behavior and studying the way in which analysts make use of financial information. His work has been featured in the *Wall Street Journal*. Prior to coming to Duke, Professor Wilson served on the faculty of the Stern School of Business at New York University.



**Robert L. Winkler, Ph.D.,** *James B. Duke Professor of Business Administration and Senior Associate Dean for Faculty and Research*; B.S. (University of Illinois), Ph.D. (University of Chicago).

Prior to joining the Duke faculty, Professor Winkler served as Distinguished Professor of Quantitative Business Analysis at Indiana University, and he has held visiting positions at the University of Washington, the International Institute for Applied Systems Analysis, Stanford University, and INSEAD. His primary research interests involve Bayesian statistics, decision analysis, risk assessment, and probability forecasting. Professor Winkler is the author of numerous research articles and books and has served on the editorial boards of several journals.

**William L. Yaeger, J.D.,** *Adjunct Associate Professor of Business Administration*; B.A. (Duke University), J.D. (Emory University).

Mr. Yaeger teaches the course Legal Environment of the Firm in the M.B.A. programs. He is in private practice in Durham, North Carolina, with an emphasis on bankruptcy and insolvency. Mr. Yaeger is a member of the North Carolina Bar Association and the National Association of Bankruptcy Trustees.

**Paul H. Zipkin, Ph.D.,** *T. Austin Finch, Sr. Professor of Business Administration*; B.A. (Reed College), M.S. (University of California), Ph.D. (Yale University).

Professor Zipkin teaches operations. His research investigates the design and operation of production and distribution systems and their analogues in service industries. He has written numerous scholarly articles and serves on the editorial boards of several journals. He co-edited a book, *Logistics of Production and Inventory*, and his new book, *Foundations of Inventory Management*, will appear shortly. Prior to coming to Duke, he served as the Armand G. Erpf Professor of Business at Columbia University.



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*bulletin of*  
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**1995-97**

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*Graduate Nursing Program*





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**1995-97**

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*Graduate Nursing Program*



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The information in the bulletin is accurate and current to the best of our knowledge, as of December 1995. The university reserves the right to revise programs, academic requirements, lectures, teaching staffs, the announced university calendar, and other matters described in the bulletin without prior notice, in accordance with established procedures. Whenever changes occur, an effort will be made to notify persons who may be affected.

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# School of Nursing Calendar 1995-1997

## Fall 1995

|                  |    |   |
|------------------|----|---|
| <b>August</b>    |    |   |
|                  | 22 | Tuesday 8:30 A.M. Orientation and registration of new students.             |
|                  | 29 | Tuesday. School of Nursing fall semester classes begin; Drop/Add continues. |
| <b>September</b> |    |   |
|                  | 8  | Friday. Drop/Add ends at 5:00 P.M. sharp.                                   |
|                  | 8  | School of Nursing Open House.   |
| <b>October</b>   |    |   |
|                  | 13 | Friday. Last day for reporting midsemester grades.                          |
|                  | 13 | Friday. Fall break begins.  |
|                  | 18 | Wednesday 8:00 A.M. Classes resume.   |
|                  | 25 | Wednesday Registration begins for spring semester 1996.                     |
| <b>November</b>  |    |   |
|                  | 14 | Tuesday. Registration ends for spring semester 1996.                        |
|                  | 15 | Wednesday. Add/Drop begins.   |
|                  | 22 | Wednesday 5:00 P.M. Thanksgiving recess begins.                             |
|                  | 28 | Tuesday. Classes resume.  |
| <b>December</b>  |    |   |
|                  | 1  | Friday. Graduate classes end.   |
|                  | 10 | Sunday. Founders' Day.  |
|                  | 12 | Tuesday. Final examinations begin.  |
|                  | 15 | Friday. Final examinations end.   |

## Spring 1996

|                 |     |  |
|-----------------|-----|--|
| <b>January</b>  |     |  |
|                 | TBA | Orientation and registration of new students.                          |
|                 | 11  | Thursday. Spring semester classes begin; Drop/Add continues.           |
|                 | 24  | Drop/Add ends at 5:00 P.M. sharp.                                      |
| <b>February</b> |     |  |
|                 | 23  | Friday. Last day for reporting midsemester grades.                     |
| <b>March</b>    |     |  |
|                 | 8   | Friday. Spring recess begins.  |
|                 | 19  | Tuesday. Classes resume.   |
|                 | 27  | Wednesday. Registration begins for fall semester 1996 and summer 1996. |
| <b>April</b>    |     |  |
|                 | 11  | Thursday. Registration ends for fall semester 1996 and summer 1996.    |
|                 | 12  | Friday. Harriet Cook-Carter lectureship. Drop/Add begins.              |
|                 | 19  | Friday. Graduate classes end.  |
|                 | 29  | Monday. Final examinations begin.                                      |
| <b>May</b>      |     |  |
|                 | 3   | Friday. Final examinations end.  |
|                 | 11  | Saturday. 7:00 P.M. School of Nursing Honors and Recognition Service.  |
|                 | 12  | Sunday. Graduation exercises; conferring of degrees.                   |

## Summer 1996

|               |     |  |
|---------------|-----|--|
| <b>May</b>    |     |  |
|               | 16  | Thursday. School of Nursing summer term classes begin. |
|               | 20  | Monday. Drop/Add for Summer Term ends.                 |
| <b>August</b> |     |  |
|               | 7   | Wednesday. School of Nursing summer term classes end.  |
|               | TBA | Final examinations for summer term.                    |

## Fall 1996

|               |    |   |
|---------------|----|---|
| <b>August</b> |    |   |
|               | 27 | Orientation and registration of new students. |

|                    |     |   |
|--------------------|-----|---|
| <b>September</b>   |     |   |
|                    | 3   | Tuesday. School of Nursing fall semester classes begin; Drop/Add continues.             |
|                    | 13  | Friday. Drop/Add ends at 5:00 P.M. sharp.   |
|                    | TBA | School of Nursing Open House  |
| <b>October</b>     |     |   |
|                    | 18  | Friday. Fall break begins.  |
|                    | 23  | Wednesday 8:00 A.M. Classes resume.   |
|                    | 30  | Wednesday. Registration begins for spring semester 1997.                                |
| <b>November</b>    |     |   |
|                    | 19  | Tuesday. Registration ends for spring semester 1997.                                    |
|                    | 20  | Wednesday. Drop/Add begins.   |
|                    | 27  | Wednesday 12:40 P.M. Thanksgiving recess begins.  |
| <b>December</b>    |     |   |
|                    | 3   | Tuesday 8:00 A.M. Classes resume.   |
|                    | 6   | Friday. Graduate classes end.   |
|                    | 16  | Monday. Final Examinations begin.   |
|                    | 20  | Friday. Final Examinations end.   |
| <b>Spring 1997</b> |     |   |
| <b>January</b>     |     |   |
|                    | TBA | Orientation and registration of new students.   |
|                    | 16  | Thursday. Spring semester classes begin.  |
|                    | 29  | Wednesday. Drop/Add period ends at 5:00 P.M. sharp.                                     |
| <b>February</b>    |     |   |
|                    | 28  | Friday. Last Day for reporting midsemester grades.                                      |
| <b>March</b>       |     |   |
|                    | 14  | Friday. Spring recess begins.   |
|                    | 25  | Tuesday 8:00 A.M. School of Nursing classes resume.                                     |
| <b>April</b>       |     |   |
|                    | 2   | Wednesday. Registration begins for summer and fall semesters 1997.                      |
|                    | TBA | Harriet Cook-Carter lectureship.  |
|                    | 17  | Thursday. Registration ends for fall semester 1997; summer 1997 registration continues. |
|                    | 18  | Friday. Drop/Add begins.  |
|                    | 25  | Friday. Graduate classes end.   |
| <b>May</b>         |     |   |
|                    | 5   | Monday. Final Examinations begin  |
|                    | 9   | Friday. Final examinations end.   |
|                    | 17  | Saturday. School of Nursing Honors and Recognition Service.                             |
|                    | 18  | Sunday. Graduation exercises; conferring of degrees.                                    |

# University Administration

## GENERAL ADMINISTRATION

Nannerl O. Keohane, Ph.D., *President*  
John W. Strohbehn, Ph.D., *Provost*  
Ralph Snyderman, M.D., *Chancellor for Health Affairs and Dean of the School of Medicine*  
Tallman Trask III, Ph.D., *Executive Vice-President*  
Eugene J. McDonald, LL.M., *Executive Vice-President-Asset Management*  
John F. Burness, A.B., *Senior Vice-President for Public Affairs*  
John J. Piva, Jr., B.A., *Senior Vice-President for Alumni Affairs and Development*  
Charles E. Putman, M.D., *Senior Vice-President for Research Administration and Policy*  
Myrna C. Adams, M.Ed., J.D., *Vice-President for Institutional Equity*  
John F. Adcock, B.S., *Vice-President and Corporate Controller*  
Tom A. Butters, B.A., *Vice-President and Director of Athletics*  
Janet Smith Dickerson, M.Ed., *Vice-President for Student Affairs*  
Joseph S. Beyel, M.S., *Vice-Chancellor for Medical Center Development and Alumni Affairs*  
William J. Donelan, M.S., *Vice-Chancellor and Chief Financial Officer for Medical Center Administration*  
Gordon Hammes, Ph.D., *Vice-Chancellor for Medical Center Academic Affairs*  
Mark C. Rogers, M.D., *Vice-Chancellor for Health Services and Executive Director of Duke University Hospital*  
David B. Adcock, J.D., *University Counsel*  
N. Allison Haltom, A.B., *Secretary of the University*  
William H. Willimon, M.Div., S.T.D., *Dean of the Chapel*

## MEDICAL CENTER ADMINISTRATION

Ralph Snyderman, M.D., *Chancellor for Health Affairs and Dean, School of Medicine*  
William J. Donelan, B.A., M.S., *Vice-Chancellor for Administration and Chief Financial Officer*  
Gordon G. Hammes, Ph.D., *Vice-Chancellor for Medical Center Academic Affairs*  
Joseph S. Beyel, M.S., *Vice-Chancellor for Health Affairs, Development, and Alumni Affairs*  
Mark C. Rogers, M.D., *Vice-Chancellor for Health Services and Executive Director and Chief Executive Officer of Duke University Hospital*  
R. C. "Bucky" Waters, B.S., M.A., *Vice-Chancellor for Special Projects, Duke University Medical Center*  
J. Robert Clapp, Jr., M.S., *Associate Vice-Chancellor, Administration*  
Robert G. Winfree, M.A., *Associate Vice-Chancellor for Health Affairs*  
James L. Bennett, Jr., A.B., *Director of Administration*  
Larry D. Nelson, B.S., *Assistant Vice-Chancellor for Health Affairs, Planning, and University Architect*  
J. Michael Gower, M.B.A., *Director of Financial Planning Systems*  
Vicki Y. Saito, B.F.A., *Assistant Vice-Chancellor for Health Affairs, Communications*  
Steven G. Sloate, M.B.A., *Associate Vice-Chancellor for Health Affairs, Planning*  
Barbara E. Echols, J.D., M.B.A., *Assistant Vice-Chancellor for Medical Center Academic Affairs*  
Dan G. Blazer, M.D., Ph.D., *Dean of Medical Education, School of Medicine*  
Mary T. Champagne, Ph.D., R.N., *Dean, School of Nursing*

## SCHOOL OF NURSING ADMINISTRATION

Mary T. Champagne, Ph.D., R.N., *Dean*  
Barbara S. Turner, D.N.Sc., R.N., *Associate Dean and Director of Nursing Research*  
Donna W. Hewitt, M.N., R.N., *Director of Continuing Education*  
W. C. Budzinski, M.B.A., *Administrative Manager*  
Maureen Shanley, M.A., *Admissions Officer*

## SCHOOL OF NURSING FACULTY

Dorothy J. Brundage, Ph.D., Walden, 1980, *Associate Professor*  
Mary T. Champagne, Ph.D., Texas at Austin, 1981, *Dean*  
Amanda L. Greene, M.S.N., North Carolina at Chapel Hill, 1987, *Assistant Clinical Professor*  
Linda K. Goodwin, Ph.D., Kansas, 1992, *Assistant Professor*  
Donna S. Havens, Ph.D., Maryland, 1990, *Assistant Professor*  
Mary H. Hawthorne, Ph.D., Adelphi, 1989, *Assistant Professor*  
Donna W. Hewitt, M.N., South Carolina, 1972, *Assistant Clinical Professor and Director, Continuing Education*  
Joanne V. Hickey, Ph.D., Texas at Austin, 1987, *Assistant Professor*  
Marcia S. Lorimer, M.S.N., Virginia, 1988, *Assistant Clinical Professor*  
A. Sue McIntire, Ed.D., North Carolina State, 1985, *Associate Professor*





Sally C. Messick, M.S., North Carolina at Chapel Hill, 1973, *Assistant Clinical Professor*  
 Jerri M. Oehler, Ph.D., Duke, 1985, *Associate Professor*  
 Ruth M. Ouimette, M.S.N., Yale, 1975, *Assistant Clinical Professor*  
 Richard F. Potthoff, Ph.D., North Carolina at Chapel Hill, 1959, *Research Scientist/Statistician*  
 Barbara S. Turner, D.N.Sc., California, San Francisco, 1984, *Associate Dean and Director of Nursing Research*  
 Sharon Wallsten, Ph.D., North Carolina State, 1987, *Assistant Clinical Professor*  
 Margaret J. Wilkman, M.P.H., North Carolina at Chapel Hill, 1971, *Assistant Clinical Professor*

## **CLINICAL FACULTY**

### **Administration of Nursing Services**

Clinical and Consulting Associates: Terry Ainsworth, M.S.N., R.N.; Sylvia Alston, M.S.N., R.N.; Mary Baldwin, M.P.H., R.N.; Gretchen Barnes, R.N., M.S.; Christel Birney, R.N., M.S.N.; Martha Dawson, M.S.N., R.N.; Linda Ellington, M.S.N., R.N.; Catherine Emens, R.N., M.S.N.; Doris Esslinger, M.S.N., C.N.A.A., R.N.; Betty Goolsby, M.S.N., R.N.; William Grau, R.N., M.S., C.N.A.A.; Peggy Harewood, M.S., R.N.; Norma Harris, M.S.N., R.N.; Becce Hingston, R.N., M.S.N.; Dana Hughes, R.N., Ph.D.; Berit Jasion, M.S.N., R.N.; Colonel Joyce Jolly, M.S.N., R.N.; Nancy Manning, M.S., R.N.; Elaine Martin-Hylwa, M.S.N., R.N.; Susan McLean, M.S.N., R.N.; Jacqueline M. Moore, R.N., Ph.D.; Major Eileen Munn, M.S.N., R.N.; Brenda Nevidjon, M.S.N., R.N.; M. Flora Pemberton, R.N., M.S.A.; Saralyn Prickett, R.N., M.S.N.; Valinda Rowe-Rutledge, M.S.N., R.N.; Mindy Schramm-Beard, M.S.N., R.N.; Linda Wallace, M. Ed., R.N.; Ruth Wallace, M. N., R.N.; Evelyn Wicker, M.P.H., R.N.; David Williams, M.S.N., R.N.; Jimmie R. Williams, M.S.N., Ed.D., R.N.; Sonja Wilson, Ed.D., R.N.; Nursing Practice Instructor: Martha Cress, R.N.

### **Family and Adult Health Including Primary Care, Acute/Critical Care, Cardiovascular, and Trauma Nursing**

Clinical and Consulting Associates: Gale Adcock, M.S.N., R.N.; Bradi L. Bartrug, R.N., M.S.N.; Cheryl Batchelor, M.S.N., R.N.; Laura J. Blue, R.N., M.S.N.; Jimmie Butts, R.N., C.S., F.N.P.; Margaret D. Bowers, R.N., M.S.N., C.C.R.N.; Alyson Breisch, M.S.N., R.N.; Syvil Burke, M.S.N., R.N.; Jane Castle, M.S.N., R.N.; Salvatore Ciresi, R.N., Ph.D.; Debra Eckart, M.S.N., R.N.; James M. Galkowski, PA., M.P.A.; Geoffrey Georgi, M.D.I.V.; Mary Elizabeth Hixon, M.S.N., R.N.; Cynthia Julich, M.S.N., R.N., C.F.N.P.; Sally Kellum, R.N., M.S.N., C.C.R.N.; Patricia S. Marley, R.N., M.S.N.; Faye W. McNall, R.N., M.P.H., M.B.A.; Mary Ann Meyer, R.N., A.N.P.; Donna Nayduch, M.S.N., R.N.; Margaret Priddy, M.S.N., R.N.; Lois Pradka, M.S.N., R.N.; Billie Ross, M.S.N., R.N.; Yvonne Spurney, M.S.N., R.N.; Rosemary Strickland, R.N., M.S.N.; Gwynn Sullivan, R.N., M.S.N.; Martin J. Sullivan, M.D.; Gale Touger, R.N., F.N.P.; Mary E. Ulrich, R.N., M.S.N.; Rita Weber, M.S.N., R.N.; Andrea Wilkes, R.N., M.S.N.; Christine Willis, M.S.N., R.N.; Nursing Practice Instructors: Helen Cook, M.S.N., R.N.; Margaret Newman, M.S.N., R.N.

### **Pediatrics**

Clinical and Consulting Associates: Debra Brandon, R.N., M.S.N.; Ellen Hart, M.S.N., R.N.; Janice Krueger, M.S.N., R.N.; Wendy Mahaffey, M.S.N., R.N.; Marie H. McCulloh, M.S.N., R.N.; Pana Meanor, M.S.N., R.N.; Susanne Meghdadpour, P.N.P., M.S.N., R.N.; Louise Minnich, M.S.N., R.N.; Jeane Newmaker, M.S.N., R.N.; Janet Nicollerat, M.S.N., CS, R.N.; Pamela Steele, M.S.N., CNA, R.N.C.; Elizabeth Stewart, M.S.N., R.N.; Nursing Practice Instructor: Michael Alton, M.S.N., R.N..

### **Oncology and Transplant Nursing**

Clinical and Consulting Associates: Elizabeth Abernathy, M.S.N.; Anthony Adinolfi, R.N., M.S.N.; Mary Lou Affronti, M.S.N., R.N.; Lisa Archer, M.S.N., R.N.; Susan Avent, M.S.N., R.N.; Janye L. Blivin, R.N., M.S.N.; Mary Ann Crouch, M.S.N., R.N.; Margaret Faircloth, M.P.H., R.N.; Kerry Harwood, R.N., M.S.N.; Linda E. Hood, M.S.N., R.N.; Gail Jens, M.S.N., R.N.; Camille Lambe, R.N., M.S.N.; Cindy Lawrence, M.S.N., R.N.; Cynthia Risse, M.S.N., R.N.; Kevin Sowers, M.S.N., R.N.; Julie Tart, M.S.N., R.N.; Gwendolyn Waddell, M.S.N., R.N.; Stephanie Yates, M.S.N., R.N. Nursing Practice Instructors: Judy Ross, M.S.N., R.N.; Linda Bright, M.S.N., R.N.; Angela Ellington, R.N., M.S.N.

### **Gerontology**

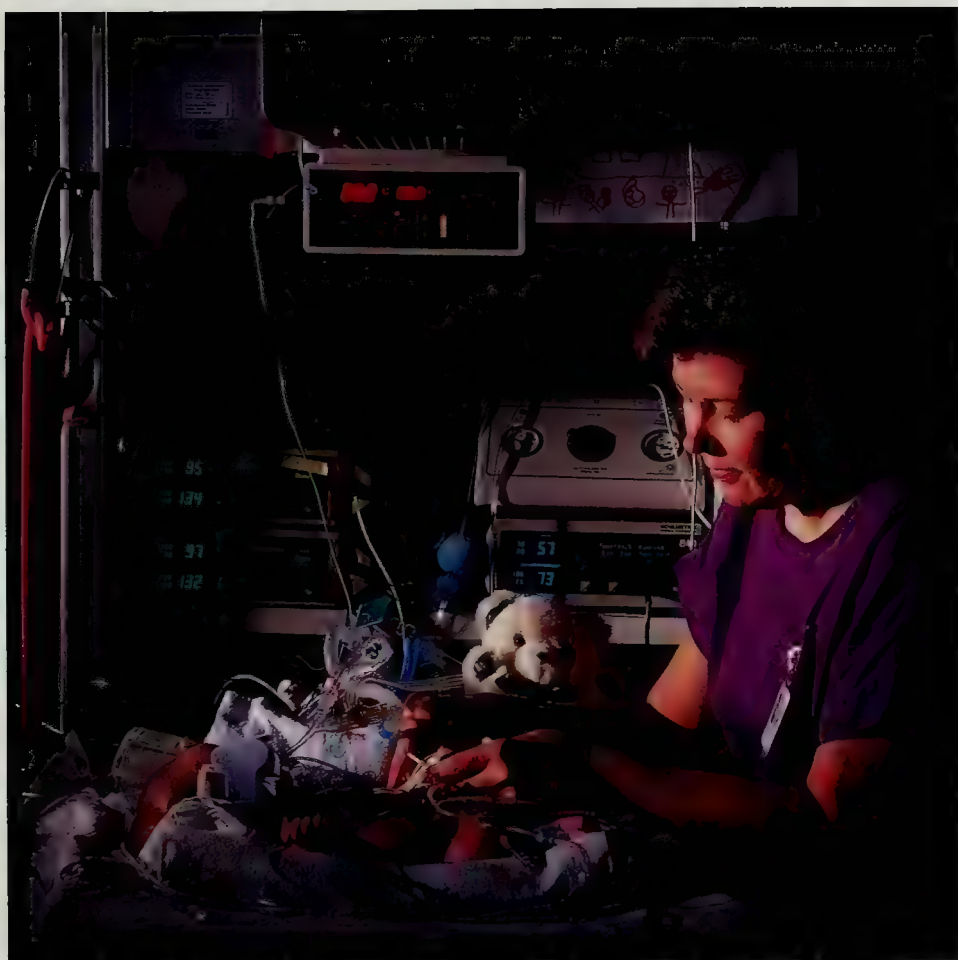
Clinical Assistant Professors: Elizabeth Clipp, Ph.D., R.N.; Eleanor McConnell, M.S.N., R.N..  
 Clinical and Consulting Associates: Lucille Bearon, Ph.D.; Sylvia Brooks, M.S.N., F.N.P., R.N.; Margaret Bye, Ed.D., R.N.; Ellen Davis, M.S.N., R.N.; Ruth Frank, M.S.N., R.N.; Hettie Garland, M.S.N., R.N.; Dana Hickman, M.S.N., R.N.; Nan Rideout, M.S., M.P.H.; Carol Saur, M.S.N., R.N.; Teepa Snow, M.S., O.T.R./L.,

F.A.O.T.A.; Linda Vanhook, M.S.N., A.N.P., R.N.; Donald Wallace, M.D., F.A.A.C.P.; Janette Warsaw, M.S.N., R.N.C.

### **Nursing Service Education**

Clinical and Consulting Associates: Julia Aucoin, M.S.N., R.N.; Jennifer Borton, M.S.N., R.N.; Kathryn Clark, R.N., M.S.; Brenda Lewis Cleary, R.N., Ph.D.; Pamela Edwards, Ed.D., R.N.; Linda C. Exner, R.N., M.S.N.; Catherine Taylor, R.N., M.N.A.; Martha C. Taylor, R.N., M.S.N.; Nursing Practice Instructors: Marilyn Agney, M.S.N., R.N.





Our goal at the Duke University School of Nursing is to provide leadership in the health care of people. Since the foundation of the school in 1931, Duke has prepared outstanding clinicians, educators, and researchers. We are continuing that tradition. Drawing on the unparalleled intellectual and clinical resources of both Duke University Medical Center and Duke University, we offer a Master of Science in Nursing that balances education, practice, and research. Faculty work closely with students to challenge and nurture them; students not only practice with state-of-the-art science and technology in a great medical center, they also have opportunities to work in rural and underserved areas. The program prepares nurses with advanced training in the areas of greatest need for tomorrow: at Duke we are developing the nursing leaders for the future.

*School of Nursing*

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## **The Duke University School of Nursing**

The Duke University School of Nursing provides leadership in the health care of people through education, research, and health care delivery. We provide advanced and comprehensive education to prepare students for lifetimes of learning and careers as leaders, practitioners, or as researchers. In addition, faculty and students conduct research that adds to our understanding of health promotion and illness prevention, human responses to illness, and systems of care that facilitate better patient outcomes; and through their practice faculty and students provide compassionate research-based nursing care. Through such work, Duke faculty, students, and graduates are shaping the future of professional nursing practice.

### **Programs**

#### **THE MASTER OF SCIENCE IN NURSING PROGRAM**

The School of Nursing offers a flexible, 39- to 43-credit program leading to the Master of Science in Nursing degree. Graduates are prepared as clinical nurse specialists in critical care, gerontology, oncology, or pediatrics; as adult nurse practitioners (with specialization in primary care, acute care, or oncology), as gerontological nurse practitioners, pediatric nurse practitioners, or family nurse practitioners and as mid-level nurse administrators. Students pursue their educational endeavors with faculty and clinical/consulting associates who have expertise and research in the student's chosen area of specialization. The curriculum is designed to provide maximum flexibility for full-time or part-time study.





The integration of education, practice and research undergirds the entire curriculum and the behavior of those individuals involved in the educative process. Upon completion of the program, the graduate will be able to:

1. synthesize concepts and theories from nursing and related disciplines to form the basis for advanced practice,
2. demonstrate expertise in a defined area of advanced practice,
3. utilize the process of scientific inquiry to validate and refine knowledge relevant to nursing,
4. demonstrate leadership and management strategies for advanced practice,
5. demonstrate proficiency in the use and management of advanced technology related to patient care and support systems,
6. analyze socio-cultural, ethical, economic, and political issues that influence patient outcomes, and
7. demonstrate the ability to engage in collegial intra- and inter-disciplinary relationships in the conduct of advanced practice.

A student may choose to major in one of the following areas: 1. nursing systems administration; 2. adult nurse practitioner (with an adult primary care, acute care, or oncology focus); 3. family nurse practitioner; 4. critical care (clinical nurse specialist); 5. oncology (nurse practitioner or clinical nurse specialist); 6. gerontology (nurse practitioner or clinical nurse specialist); and 7. pediatrics (nurse practitioner or clinical nurse specialist).

#### **THE POST-MASTER'S CERTIFICATE PROGRAM**

The School of Nursing offers a post-master's certificate to students who already have an earned MSN and are seeking specialized knowledge within a major offered in the school's master's program. The number of credits required to complete the certificate program varies by major; the student must successfully complete the required courses in the chosen nursing major. Completion of the certificate program will be documented in the student's academic transcript. Depending upon the major, the student may then meet the qualifications for advanced practice certification in the specialty area. For example, students who complete the post-master's certificate in the nurse practitioner majors are eligible to sit for certification examinations.

## *General Information*

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## Duke University

In 1839 a group of citizens from Randolph and adjacent counties in North Carolina assembled in a log schoolhouse to organize support for a local academy founded a few months earlier by Brantley York. Prompted, they said, by “no small share of philanthropy and patriotism,” they espoused their belief that “ignorance and error are the banes not only of religious but also civil society which rear up an almost impregnable wall between man and happiness.” The Union Institute, which they then founded, was reorganized in 1851 as Normal College to train teachers and eight years later as Trinity College, a liberal arts college. Trinity College later moved to Durham and, with the establishment of the James B. Duke Indenture of Trust in 1924, became Duke University. An original statement of the Board of Trustees of Trinity College concerning the establishment of Duke University provided clear direction about the size and purpose of the university. This statement was as follows: “This University in all its departments will be concerned about excellence rather than size; it will aim at quality rather than numbers—quality of those who teach and quality of those who learn. . . .” This belief continues to guide admission decisions for students and employment practices for faculty.

From academy to university, some of the basic principles have remained constant. The Duke University motto, *Eruditio et Religio*, reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, and the nation. Through changing generations of students, the objective has been to encourage individuals to achieve, to the extent of their capacities, an understanding and appreciation of the world in which they live, their relationship to it, their opportunities and their responsibilities.

Today, Duke University has over 9,000 students, of whom 3,000 are enrolled in the graduate and professional programs. These students represent nearly every state and many foreign countries; Duke has more than 60,000 alumni in all fifty states and in many foreign countries.

Established in 1930 in association with the School of Medicine and Duke Hospital, the School of Nursing joins the Schools of Medicine, Law, Engineering, Divinity, Business, and Environment in preparing qualified individuals for professional leadership and developing excellence in education for the professions.

**Duke University Medical Center.** The bequests of James Buchanan Duke provided for the opening, in 1930, of the School of Medicine, School of Nursing, and Duke Hospital, which today are the core institutions of the Duke University Medical Center. By opening the first major outpatient clinics in the region in 1930, Duke recognized its responsibility to provide quality care to the people of the Carolinas.

Building on this heritage, the Duke University Medical Center ranks among the outstanding health care centers of the world. The opening of Duke Hospital North in 1980 makes the Duke Hospital, with 1,048 beds, one of the most modern patient care facilities available anywhere. The combined strengths of its teaching, research, and hospital and outpatient care programs represent the continuing fulfillment of the dream of James Buchanan Duke.

Today, the Medical Center at Duke University occupies approximately 200 acres on the West Campus. The goal of the Medical Center is to be a leader in contemporary health care. This involves maintaining superiority in its four primary functions: unexcelled patient care, dedication to educational programs, national and international distinction in the quality of research, and service to the region.

**The Duke School of Nursing.** The School of Nursing first admitted students to a three-year diploma program in 1931. In 1938, the school began awarding baccalaureate degrees to students who completed two years of college along with the nursing curricula. In 1953, a four-year professional program in nursing leading to the bachelor of nursing degree was established, and in 1958, a graduate program to prepare clinical nurse specialists began. This master's program, which prepared advanced practitioners for clinical practice, was the forerunner of graduate nursing programs nationally.

Today, the School of Nursing offers graduate education for nurses seeking the master of science degree or the post-master's certificate in a variety of majors, including adult health, family health, gerontology, nursing administration, oncology, and pediatrics. Nurse practitioner programs are offered in all four clinical areas. The school is fully accredited by the National League for Nursing. Through educational programs, research, and service, the School of Nursing is dedicated to improving access to care, providing high quality cost-effective care, and preparing leaders for today and tomorrow.

## **Educational Resources**

The Duke University School of Nursing is located on the West Campus between Duke Hospital North and Duke Hospital South and is easily accessible to and from all other university facilities. Students are provided with modern classrooms and labs and well equipped audio-visual and computer centers.

**The Duke Nursing Research Center.** The goal of the Nursing Research Center is to facilitate the conduct of clinical research by students, faculty and nursing staff. The center provides support for research through assistance with literature searches, development of research designs, Institutional Review Board and/or the protection of human subjects consultation, data collection and data management, grant proposal development, and editorial review. In addition to individual consultation, short courses or workshops are offered. A comfortable conference room is available for research meetings by teams of scholars. This room houses a small collection of research texts and journals for reference as well as a computer with on-line databases for literature searches.

**The Duke Nursing Computer Laboratory.** The computer laboratory, located in the School of Nursing, is equipped with fifteen state-of-the-art computer work-stations and laser



printer, all connected to a local area network (LAN). Students have access to the most widely used, up-to-date computer applications in word processing, graphics, spread sheet, database, statistical entry and analysis as well as the Internet. The lab is available to students twenty-four hours a day. Technical assistance is provided to students by faculty and staff with computer expertise.

**Duke Centers.** Nationally recognized centers include the Duke Heart Center, the Center for Aging and Human Development, the Comprehensive Cancer Center, the Comprehensive Sickle Cell Center, Alzheimer's Disease Research Center, Duke Hypertension Center, Duke-VA Center for Cerebrovascular Research, Geriatric Research, Education, and Clinical Center, Cystic Fibrosis/Chest Center and Clinic, Sleep Disorders Center, and the Eye Center.

**Women's Studies.** The women's studies program is a multidisciplinary forum for the study of women's roles and gender differences in various societies, past and present. Established in 1982, it offers courses, lectures, films, programs, and research support and brings together faculty and students from all fields who are concerned with both the theoretical questions stemming from the study of gender as well as the implications of such investigations for women and men in contemporary societies. The program offers



certificates, as well as a variety of other opportunities. Students in the School of Nursing have the opportunity to pursue a graduate certificate in women's studies.

**Neighboring Universities.** Through a reciprocal agreement, Duke students may supplement their education in nursing by taking courses in related fields at the University of North Carolina in Chapel Hill, North Carolina State University in Raleigh, and North Carolina Central University in Durham. Graduate students of Duke University and the University of North Carolina at Chapel Hill are granted library loan privileges in both universities.

## Libraries

The libraries of the university consist of the William R. Perkins Library and its seven branches on campus: Biology-Forestry, Chemistry, Divinity, Lilly (East Campus), Engineering, Music, Mathematics-Physics; the Pearse Memorial Library at the Duke Marine Laboratory in Beaufort; and the independently administered libraries of Law, Business (Fuqua), and the Medical Center. As of April 1992, these libraries contained over 4 million volumes. The collection includes 9.5 million manuscripts, and over 2 million public documents.

**The Medical Center Library.** Located in the Seeley G. Mudd Communications Center and Library Building, the Medical Center Library provides services and collections necessary to support educational, research, and clinical activities. Services are available to Medical Center employees, students, faculty, and staff, including the School of Nursing, the School of Medicine, the Division of Allied Health, Duke Hospital, and the graduate departments in the basic health sciences. The library has sizable holdings of nursing books and journals, as well as audio-visual materials. Indexes available include the International Nursing Index, the Cumulative Index to Nursing and Allied Health Literature, and the Nursing Studies Index. MEDLINE, CINAHL, and many other databases are available through computer searches. Additional materials from major medical center libraries are available through interlibrary loans. The uniform borrowing privileges apply to all registered users. Details of loan and other services may be found in the guide published yearly and available at the library.

## Clinical Facilities

**Duke Hospital.** Duke Hospital, one of the largest private hospitals in the south, is part of the Medical Center and currently is licensed for 1,048 beds. The hospital directs its efforts toward the three goals of expert patient care, professional education, and service to the community. It offers patients modern comprehensive diagnostic and treatment facilities and special acute care and intensive nursing units for seriously ill patients. More than 34,000 patients are admitted annually. Ambulatory services include the outpatient clinics, private diagnostic clinics, the employee health service, and the emergency department, with annual total patient visits of over 473,000. The clinical faculty of the Duke University School of Nursing participate in graduate nursing education and practice nursing in the hospital and in the ambulatory settings.

**Veterans Affairs Medical Center.** The Durham Area Veterans Affairs Medical Center, with 435 beds, annually admits over 7,000 patients. Through recent renovations, the medical center has state-of-the-art intensive care units and an extended care research center. The hospital is within walking distance from the School of Nursing.

**Lenox Baker Children's Hospital.** On November 1, 1987, the Lenox Baker Children's Hospital became a part of Duke University Medical Center, entering a new phase in its development as an orthopaedic and rehabilitation center for the children of North Carolina. A full spectrum of orthopaedic and rehabilitation services is offered to identify

and meet realistic goals; and to educate, support, and assist families, schools, and communities in providing a rich environment for disabled children.

**Durham Regional Hospital.** Durham Regional Hospital is a county-owned, 476-bed general, short-term care community facility serving the residents of Durham County. This institution participates in many nursing and health-related educational experiences.

**Other Hospitals and Clinical Facilities.** Various cooperative teaching and clinical arrangements are available to students at other clinical facilities in both urban and rural settings. These hospitals include Moore Regional Hospital, Columbus County Hospital, Dorothea Dix Hospital, Cape Fear Valley Medical Center, John Umstead Hospital, Womack Army Medical Center, Raleigh Community Hospital, Rex Hospital, Carteret General Hospital, Southeastern General Hospital, and Central Carolina Hospital. Long-term care facilities include Carolina Meadows, Horizon Rehabilitation Center, and Saint Joseph's of the Pines. Ambulatory clinics and health departments include Uwharrie Family Health Care, Stovall and Oxford Family Practice, Foscoe Family Health Center, East Chatham and Goldston Health Center, Lincoln Community Health Center, Southeast Permanente Medical Group of North Carolina, PA, Cumberland County Health Department, and Scotland County Health Department.

**Duke University Affiliated Physicians.** Other primary care practice sites include Duke University Affiliated Physicians, Inc. (DUAP), a primary care delivery system serving the greater Triangle area. DUAP currently includes eleven practices staffed by Duke faculty who have a commitment to quality health care and quality service.

**Duke University Affiliations Program.** The Affiliations Program is creating strong linkages with community hospitals throughout North Carolina. Working closely with Duke University Affiliated Physicians, the program addresses the need for more primary care physicians and physician extenders, helps communities plan and develop specialty programs, and works in affiliated communities to prepare collaborative responses to growth of managed care.

**Special Clinical Arrangements.** Depending on the student's experience and interest, in accordance with course objectives, special arrangements can be made with other clinical facilities and agencies.

# *Admission and Progression*





# Admission and Progression

## ADMISSION REQUIREMENTS FOR THE MASTER'S DEGREE

1. Bachelor's degree with an upper division nursing major from a program accredited by the National League for Nursing. The bachelor's or post-bachelor's course work must include satisfactory completion of a course in descriptive and inferential statistics.
2. It is recommended that applicants have a minimum of one year of nursing experience before matriculation. Students for whom an exception is made will be advised to take core courses in the first year of study and to work to meet the experience requirement.
3. Undergraduate grade point average of 3.0 on a 4.0 scale.
4. Satisfactory performance on the Graduate Record Examination (GRE) or Miller Analogies Test (MAT).
5. Eligibility to be licensed as a professional nurse in North Carolina.\*
6. Documentation of the acquisition of physical assessment knowledge and skills, for those applicants choosing a clinical specialty.
7. Three references attesting to personal and professional qualifications. At least two references must be from former employers, faculty members, or deans.
8. Personal interview. Other arrangements may be considered when distance is a factor.
9. Basic computer skills are required prior to matriculation.

Selection will be based on the applicant's qualifications, intellectual curiosity, potential for professional growth, and contributions to the profession. Exception to any of the admission requirements will be considered on an individual basis.

## ADMISSION REQUIREMENTS FOR THE POST-MASTER'S CERTIFICATE OPTION

1. Completion of application for certificate program including undergraduate and graduate transcripts. The bachelor's or post-bachelor's course work must

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\*Candidates for admission to the Duke University School of Nursing must obtain a license to practice in the state of North Carolina before matriculation. Offers of admission to the School of Nursing cannot be considered final until matriculants present proof of licensure to the Office of Admissions no later than the end of the first day of class during the semester of matriculation.

Students enrolled in the Graduate School of Nursing must maintain a current North Carolina license and are required to show proof of licensure, or status of renewal of license, to the admissions officer on a yearly basis (January).

Information on licensure procedures for the state of North Carolina may be obtained from the North Carolina Board of Nursing, P. O. Box 2129, Raleigh, North Carolina 27602, or by calling 919-782-3211 or 919-733-5356.

include satisfactory completion of a course in descriptive and inferential statistics.

2. Minimum of one year's experience in nursing.
3. A master's degree from an NLN accredited school of nursing.
4. Licensure or eligibility for licensure as a registered nurse in North Carolina.
5. Documentation of the acquisition of physical assessment knowledge and skills, for those applicants choosing a clinical specialty.
6. Two letters of academic and/or professional reference.
7. Interview with a faculty member in the specialty area.

## **HEALTH AND IMMUNIZATION RECORD**

North Carolina law requires all new students to present proof of certain immunizations before matriculation. The Duke University Student Health Immunization Form and Report of Medical History, furnished by Duke University, should be completed and returned to the Director of Student Health Services, Box 2899 DUMC, Duke University, Durham, North Carolina 27710 (919-684-3367).

It is preferable for students to arrive on campus with complete, verified immunization forms. For those who are unable to do so, the Durham County Health Department (560-7600) on Main Street provides some of the necessary inoculations free of charge. On-campus inoculations are available through Student Health Services (684-3367). A special immunization clinic is held during the days when new students arrive on campus, with a nominal charge for on-campus immunizations.

## **ADDITIONAL ADMISSION REQUIREMENTS FOR INTERNATIONAL APPLICANTS**

International students provide a unique cultural and personal addition to Duke. They are encouraged to apply early in the academic year prior to the year they wish to attend Duke to ensure time to complete the following additional requirements:

1. evidence of adequate financial support for the duration of the program;
2. a minimum score of 550 on the Test of English as a Foreign Language (TOEFL) if English is not the primary language;
3. a passing score on the Commission on Graduates of Foreign Nursing Schools (CGFNS) examination.

The Commission on Graduates of Foreign Nursing Schools (CGFNS) examination is a prerequisite for taking the Registered Nurse Licensing examination in the state of North Carolina and for obtaining a nonimmigrant occupational preference visa (H1-A) from the United States Immigration and Naturalization Service. CGFNS offers a two-part certification program that includes a credentials review, followed by a test of nursing and English language skills. The CGFNS examination is given in March, August, and November. Application materials may be requested from CGFNS, 3624 Market Street, Philadelphia, Pennsylvania 19014 (215-349-8767). The registration deadlines for these exams are approximately four months prior to their administration. Early application is therefore essential. For further information, contact the School of Nursing Office of Admissions.

## **ADMISSION PROCEDURE**

An applicant to the Duke University School of Nursing Graduate Program must obtain an application form from the School of Nursing Office of Admissions. A check or

money order for the nonrefundable processing fee of \$50 must accompany each application. In addition, the applicant should provide the following supporting documents:

1. two copies of the official transcript from each college or university attended, to be sent directly to the School of Nursing Office of Admissions;
2. two supplementary transcripts showing completion of work that was in progress when the earlier transcripts were obtained, if necessary;
3. three letters of recommendation (*on forms provided by the School of Nursing*) by persons qualified to judge the applicant as a prospective graduate student, to be mailed directly to the Office of Admissions (at least two must be from current or former employers, faculty members, or deans); and,
4. for master's degree applicants, scores from the Graduate Record Examination (GRE) or Miller Analogies Test (MAT) that are not more than five years old.

Testing dates and locations for the Graduate Record Examination can be obtained from most colleges or from the Educational Testing Service, P. O. Box 6000, Princeton, New Jersey 08541-6000 (609-771-7670 or 510-654-1200). Information for the Miller Analogies Test can be obtained from The Psychological Corporation, 555 Academic Court, San Antonio, Texas 78204-3956 (210-921-8801 or 800-622-3231). Information also may be obtained from Duke University's Office of Counseling and Psychological Services (CAPS) (919-660-1020). The number to use on the GRE to indicate that you want a copy of your scores sent to the School of Nursing is R5173. The number to use on the MAT is 2734.

Once all of the above information is received by the Office of Admissions, a faculty member will contact the applicant and arrange a personal interview.

## CONSIDERATION OF APPLICATION

The application will be considered when all forms have been received by the School of Nursing Office of Admissions. Complete applications to the Duke University School of Nursing Graduate Program must be submitted by the following dates:

March 1 (fall and summer semesters);

November 1 (spring semester).

It is the responsibility of the applicant to ensure that the School of Nursing Office of Admissions receives all required materials before the deadline.

**Notification of Status.** Admission may be approved, deferred, or rejected. If admission is approved, the applicant will receive a letter of admission and acceptance forms. The process of admission is not complete until the acceptance forms and nonrefundable tuition deposit of \$100 have been received by the School of Nursing Office of Admissions. This fee will be credited toward tuition. Applicants whose admission is deferred or rejected will be notified by letter. Applicants who wish to be considered for financial assistance are highly encouraged to complete and submit a free Application for Federal Student Aid as soon as possible *before applying for admission*.

## FULL-TIME AND PART-TIME DEGREE STATUS

Opportunities for part-time and full-time study are available. Full-time status is defined as taking a minimum of nine (9) credits per semester, excluding summer session when fewer credits may be taken. Students who wish to change from full-time or part-time status must request permission from the dean.

## NONDEGREE STUDENTS

Individuals may take graduate level courses as a nondegree student, provided they have a bachelor of science in nursing degree from a National League for Nursing accredited school. Nondegree students are admitted to individual classes by permission



of the instructor on a space available basis. To apply, an official copy of all undergraduate nursing transcripts must be sent to the School of Nursing Office of Admissions along with a completed Application for Admission as a nondegree student and a \$50 application fee. Students who register for clinical courses also must submit two letters of reference from their employer and evidence of licensure as a nurse in the state of North Carolina.

All nondegree application requirements must be received by the deadline for the semester during which the course will be offered (cf. "Consideration of Application" in this book). Requests for nondegree status will be considered within two weeks after the appropriate deadline. If permission is granted by the faculty, the student will be notified by the Office of Admissions. (Nondegree students requesting a second course make the request to the School of Nursing Office of Admissions.) Up to seven credits earned as a nondegree student are accepted for credit towards the MSN degree if the applicant is later admitted to the master's program.

## **TRANSFER OF GRADUATE CREDITS**

A maximum of six units of graduate credit may be transferred for graduate courses completed at other accredited institutions (or in other graduate programs at Duke). Transfer credit will be given only for academic work completed within five years before matriculation at Duke. Such units are transferable only if the student has received a grade of *B* (3.0 or its equivalent) and after the student has earned a minimum of 6 units of graduate credit at Duke University School of Nursing. A student wishing to transfer course work should make a written request, and provide a syllabus or some other description of the course to his/her academic advisor.

## **TRANSFER TO ANOTHER GRADUATE NURSING MAJOR**

A change of graduate nursing major may be made, contingent upon approval of the faculty involved. Should a change be made, a student must meet all requirements of the new major.

## **TIME FOR COMPLETION OF THE MASTER'S DEGREE**

The master's degree student should complete all requirements for the degree within five calendar years from the date of initial matriculation. No full-time residence is required; however, all students enrolled in the school who have not been granted a leave of absence by the dean must register each fall, spring, and summer until all degree requirements are completed.

## **ADVISEMENT**

An interim academic advisor for each student is assigned on admission to the program. After consultation with the interim and proposed advisors, students select their permanent advisor according to their clinical and research interests in the area of study. This advisor assists the student in planning and implementing his/her course of study throughout the master's program.

## **GRADES**

All courses counting toward the master's degree must be taken for the following grades: *A* (4.0); *A-* (3.7); *B+* (3.3); *B* (3.0); *B-* (2.7); *C+* (2.3); *C* (2.0).

Master's Degree students with a GPA of less than 2.7 after completing 20 credits will be asked to withdraw from the program. Post-Master's Certificate students with a GPA of less than 2.7 after completing 10 credits will be asked to withdraw from the program. An *F* (0.0) in any graduate level course will result in administrative withdrawal from the program at the end of the semester in which the grade is received.

In case of illness or other nonacademic problems, it is the student's responsibility to negotiate with the professor for an *I* (incomplete grade). In the case of an *I*, the



professor issuing the *I* will specify the date by which the student is to remove the deficiency; in no case will this be more than one calendar year from the date the course ended.

#### **WITHDRAWAL FROM A COURSE**

Students may make changes in their schedule during the two week drop/add period at the beginning of the fall and spring semesters and during the first three days of the summer semester. A fee is charged by the university if changes are made after that period. If a student withdraws from a course after the drop/add period, the progress of the student at the time of withdrawal from the course will be indicated on the record as *Withdrew Passing (WP)* or *Withdrew Failing (WF)*.

#### **INTERRUPTION OF PROGRAM AND WITHDRAWAL FROM THE GRADUATE PROGRAM**

The School of Nursing reserves the right, and matriculation by the student is a concession of this right, to request the withdrawal of any student whose performance at any time is not satisfactory to the School of Nursing. If a student for any reason wishes to withdraw from the school, notification should be made to the dean before the expected date of withdrawal. Students who have withdrawn from the program must apply for readmission according to regular admission policies.

Students who find it necessary to interrupt their program of study should request in writing a leave of absence addressed to the dean of the School of Nursing. A maximum of one calendar year's leave may be granted; this will be counted toward the total time allowed to complete the program.

#### **COMMENCEMENT**

Graduation exercises are held once a year, in May, when degrees are conferred and diplomas issued to students who have completed all requirements. Students who complete degree requirements by the end of the fall or by the end of the summer term receive diplomas dated December 30 or September 1, respectively. There is a delay in the mailing of September and December diplomas because diplomas cannot be issued until they are approved by the Academic Council and Board of Trustees. All graduates, including those receiving degrees in December and September, are expected to attend graduation exercises in May.

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## *Master's Degree*





## Requirements for the Master's Degree

Each of the school's majors requires the completion of 39 to 43 units of credit. These units include core courses required of all master's students, the research option (either the thesis, a research project, or a course in research utilization), courses in the major, and electives. Each major requires the student to complete a clinical residency.

| Required Core Courses*                                 | Credits |
|--|---------|
| N301. Foundations of Advanced Nursing Practice         | 3       |
| N302. Informatics                                      | 2       |
| N303. Issues in Contemporary Health Care Organizations | 3       |
| N307. Research Methods                                 | 2       |
| N308. Applied Statistics                               | 2       |
| Total  | 12      |

| Research Options (Select One)*   | Credits |
|----------------------------------|---------|
| N312. Research Utilization       | 3       |
| N313. Thesis                     | 6       |
| N314. Nonthesis Research Project | 6       |
| Total                            | 3-6     |

## Major Fields of Study

### NURSING SYSTEMS ADMINISTRATION

The major in Nursing Systems Administration focuses on changes in the health care delivery system, models of nursing care delivery, financial management and patient outcomes. The total minimum number of credits required for graduation is 39. Course work in the major includes the following:

|  | Credits |
|--|---------|
| N340. Nursing Systems Administration I         | 3       |
| N344. Nursing Systems Administration II        | 3       |
| N348. Budget Planning and Financial Management | 4       |
| N345. Nursing Administration Residency         | 3-9     |
| Electives/Independent Study                    | 3-12    |
| Total  | 21-24   |

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\*Required of all MSN candidates.

## NURSE PRACTITIONER MAJORS

The majority of nurse practitioner majors focus on the knowledge and skills necessary to provide primary care across settings, including care of individuals in rural and underserved areas. The Acute Care Nurse Practitioner major focuses on the knowledge and skills to provide care to individuals (including the critically ill) during hospitalization. The total minimum number of credits required for graduation varies by major. Course work in the major includes 18 credit units of practitioner core courses and 9 to 10 additional credits including the residency in the major.

| <b>Practitioner Core Courses (Required for all NP students)</b> | <b>Credits</b> |
|---|----------------|
| N352. Diagnostic Reasoning and Physical Assessment              | 4              |
| N354. Managing Common Acute and Chronic Health Problems I       | 4              |
| N355. Managing Common Acute and Chronic Health Problems II      | 4              |
| N356. Clinical Pharmacology and Interventions                   | 3              |
| N357. Selected Topics in Advanced Pathophysiology               | 3              |
| <b>Total</b>  | <b>18</b>      |

## NURSE PRACTITIONER OPTIONS

| <b>Adult Nurse Practitioner-Adult Primary Care Major</b>                 | <b>Credits</b> |
|--|----------------|
| Clinical Elective  | 3              |
| Elective   | 3              |
| N326. Nurse Practitioner Residency: Acute and Chronic Illness Management | 3              |
| <b>Total</b>   | <b>9</b>       |

| <b>Adult Nurse Practitioner-Oncology/HIV Major</b>         | <b>Credits</b> |
|--|----------------|
| N330. Oncology Nursing I: Epidemiology and Pathophysiology | 3              |
| N332. Oncology Nursing II: Symptom and Problem Management  | 3              |
| N335. Nurse Practitioner Residency: Oncology               | 3              |
| <b>Total</b>   | <b>9</b>       |

| <b>Acute Care Nurse Practitioner Major</b>                       | <b>Credits</b> |
|--|----------------|
| N363. Management of Adult Critically Ill Patients                | 3              |
| N364. Management of Acutely/Critically Ill Neuroscience Patients | 3              |
| N365. Acute Care Nurse Practitioner Residency                    | 3              |
| <b>Total</b>   | <b>9</b>       |

| <b>Gerontological Nurse Practitioner Major</b>             | <b>Credits</b> |
|--|----------------|
| N370. Social Issues, Health, and Illness in the Aged Years | 3              |
| N376. Managing Care of the Frail Elderly                   | 3              |
| N375. Nurse Practitioner Residency: Gerontology            | 3              |
| <b>Total</b>   | <b>9</b>       |

| <b>Pediatric Nurse Practitioner Major</b>                            | <b>Credits</b> |
|--|----------------|
| N384. Advanced Concepts in Development in Pediatric Nursing Practice | 3              |
| N385. Advanced Nursing Care of Children with Major Illnesses         | 3              |
| N386. Nurse Practitioner Residency: Pediatrics                       | 3              |
| <b>Total</b>   | <b>9</b>       |

|   |                |
|---|----------------|
| <b>Family Nurse Practitioner Major</b>    | <b>Credits</b> |
| N393. Child Health in Family Care         | 3              |
| N394. Sexual and Reproductive Health      | 3              |
| N395. Family Nurse Practitioner Residency | 4              |
| Total                                     | <u>10</u>      |

## CLINICAL NURSE SPECIALIST MAJORS

The clinical nurse specialist majors focus on the knowledge and skills necessary to provide care to patients with complex health problems and their families, in a variety of settings. The total minimum number of credits required for graduation is 39. Course work in the majors includes 10 credit units in the clinical nurse specialist core courses and 9 to 14 credit units in the major. Elective credits are used to support the major.

|   |                |
|---|----------------|
| <b>Clinical Nurse Specialist Core Courses<br/>(Required for all CNS students)</b> | <b>Credits</b> |
| N352. Diagnostic Reasoning and Physical Assessment                                | 4              |
| N356. Clinical Pharmacology and Interventions                                     | 3              |
| N357. Selected Topics in Advanced Pathophysiology                                 | 3              |
| Total   | <u>10</u>      |

## CLINICAL NURSE SPECIALIST OPTIONS

|   |                |
|---|----------------|
| <b>CNS—Critical Care Major</b>                  | <b>Credits</b> |
| Clinical Elective                               | 3              |
| Elective  | 3              |
| N325. CNS Practicum—Acute/Critical Care Nursing | 3              |
| Electives/Independent Study                     | 2-5            |
| Total   | <u>11-14</u>   |

|   |                |
|---|----------------|
| <b>CNS—Gerontology Major</b>                                  | <b>Credits</b> |
| N370. Social Issues, Health, and Illness in the Aged Years    | 3              |
| N354. Managing Common Acute<br>and Chronic Health Problems I  | 4              |
| N355. Managing Common Acute<br>and Chronic Health Problems II | 4              |
| N376. Managing Care of the Frail Elderly                      | 3              |
| Total   | <u>14</u>      |

|   |                |
|---|----------------|
| <b>CNS—Oncology Major</b>                                     | <b>Credits</b> |
| N330. Oncology Nursing I: Epidemiology<br>and Pathophysiology | 3              |
| N332. Oncology Nursing II: Symptom<br>and Problem Management  | 3              |
| N334. Clinical Nurse Specialist Residency: Oncology           | 3              |
| Electives/Independent Study                                   | 2-5            |
| Total   | <u>11-14</u>   |

|   |                |
|---|----------------|
| <b>CNS—Pediatrics Major</b>   | <b>Credits</b> |
| N384. Advanced Concepts in Development<br>in Pediatric Nursing Practice | 3              |
| N385. Advanced Nursing Care of Children with Major Illnesses            | 3              |
| N383. CNS Practicum: Pediatrics   | 3              |
| Electives/Independent Study   | 2-5            |
| Total   | <u>11-14</u>   |



# Course of Study for the Post-Master's Certificate

The purpose of the post-master's certificate program is to provide opportunities for students who already have an earned MSN to gain specialized knowledge within a major provided at Duke University School of Nursing. The post-MSN certificate represents the student's successful completion of the required courses in the chosen nursing major. Course requirements for the post-MSN certificate are listed below by major.

## NURSING SYSTEMS ADMINISTRATION

|  | Credits |
|--|---------|
| N340. Nursing Systems Administration I       | 3       |
| N344. Nursing Systems Administration II      | 3       |
| N345. Nursing Administration Residency       | 3-9     |
| N348. Financial Planning and Budget Analysis | 4       |
| Total  | 13-19   |

## ADULT

| Adult Nurse Practitioner - Primary Care                  | Credits |
|--|---------|
| N352. Physical Assessment and Diagnostic Reasoning       | 4       |
| N354. Common Acute and Chronic Health Problems I         | 4       |
| N355. Common Acute and Chronic Health Problems II        | 4       |
| N356. Clinical Pharmacology and Interventions            | 3       |
| N326. NP Residency: Acute and Chronic Illness Management | 3       |
| N357. Selected Topics in Advanced Pathophysiology        | 3       |
| Total  | 21      |

|                   |     |
|-------------------|-----|
| Clinical Elective | 3   |
| Elective          | 3   |
| Total             | 27* |

| Adult Nurse Practitioner - Acute Care              | Credits |
|--|---------|
| N352. Physical Assessment and Diagnostic Reasoning | 4       |
| N354. Common Acute and Chronic Health Problems I   | 4       |
| N355. Common Acute and Chronic Health Problems II  | 4       |
| N356. Clinical Pharmacology and Interventions      | 3       |
| N357. Selected Topics in Advanced Pathophysiology  | 3       |
| N365. Acute Care Nurse Practitioner Residency      | 3       |
| Total  | 21      |

|  |     |
|--|-----|
| N363. Management of Adult Critically Ill Patients                      | 3   |
| N364. Management of Acutely/Critically Ill Adult Neuroscience Patients | 3   |
| Total  | 27* |

\*If a candidate has an MSN with a clinical major but desires the NP post-master's certificate in a different area, or if the candidate has an MSN in administration, the two clinical courses (6 credits) in the new area will also be required.



## ONCOLOGY NURSING

### Clinical Nurse Specialist

|  | Credits |
|--|---------|
| N352. Physical Assessment and Diagnostic Reasoning         | 4       |
| N356. Clinical Pharmacology and Interventions              | 3       |
| N330. Oncology Nursing I: Epidemiology and Pathophysiology | 3       |
| N332. Oncology Nursing II: Symptom and Problem Management  | 3       |
| N334. Clinical Nurse Specialist Residency: Oncology        | 3       |
| N357. Selected Topics in Advanced Pathophysiology          | 3       |
| Total  | 19      |

### Nurse Practitioner

|  | Credits |
|--|---------|
| N352. Physical Assessment and Diagnostic Reasoning | 4       |
| N354. Common Acute and Chronic Health Problems I   | 4       |
| N355. Common Acute and Chronic Health Problems II  | 4       |
| N356. Clinical Pharmacology and Interventions      | 3       |
| N357. Selected Topics in Advanced Pathophysiology  | 3       |
| N335. Nurse Practitioner Residency: Oncology       | 3       |
| Total  | 21      |

|  |     |
|--|-----|
| N330. Oncology Nursing I: Epidemiology and Pathophysiology | 3   |
| N332. Oncology Nursing II: Symptom and Problem Management  | 3   |
| Total  | 27* |

\*If a candidate has an MSN with a clinical major but desires the NP post-master's certificate in a different area, or if the candidate has an MSN in administration, the two clinical courses (6 credits) in the new area will also be required.

## GERONTOLOGICAL NURSING

| Clinical Nurse Specialist                                 | Credits |
|---|---------|
| N352. Physical Assessment and Diagnostic Reasoning        | 4       |
| N354. Common Acute and Chronic Health Problems I          | 4       |
| N355. Common Acute and Chronic Health Problems II         | 4       |
| N356. Clinical Pharmacology and Interventions             | 3       |
| N357. Selected Topics in Advanced Pathophysiology         | 3       |
| N370. Social Issues, Health and Illness in the Aged Years | 3       |
| N376. Managing Care of the Frail Elderly                  | 3       |
| Total   | 24      |

| Nurse Practitioner  | Credits |
|---|---------|
| N352. Physical Assessment and Diagnostic Reasoning        | 4       |
| N354. Common Acute and Chronic Health Problems I          | 4       |
| N355. Common Acute and Chronic Health Problems II         | 4       |
| N356. Clinical Pharmacology and Interventions             | 3       |
| N357. Selected Topics in Advanced Pathophysiology         | 3       |
| N370. Social Issues, Health and Illness in the Aged Years | 3       |
| N376. Managing Care of the Frail Elderly                  | 3       |
| N375. GNP Clinical Residency                              | 3       |
| Total   | 27      |

## PEDIATRIC NURSING

| Clinical Nurse Specialist   | Credits |
|---|---------|
| N352. Physical Assessment and Diagnostic Reasoning                      | 4       |
| N356. Clinical Pharmacology and Interventions                           | 3       |
| N357. Selected Topics in Advanced Pathophysiology                       | 3       |
| N384. Advanced Concepts in Development in<br>Pediatric Nursing Practice | 3       |
| N385. Advanced Nursing Care of Children with Major Illnesses            | 3       |
| N383. CNS Practicum: Pediatrics   | 3       |
| Total   | 19      |

| Nurse Practitioner                                 | Credits |
|--|---------|
| N352. Physical Assessment and Diagnostic Reasoning | 4       |
| N354. Common Acute and Chronic Health Problems I   | 4       |
| N355. Common Acute and Chronic Health Problems II  | 4       |
| N356. Clinical Pharmacology and Interventions      | 3       |
| N357. Selected Topics in Advanced Pathophysiology  | 3       |
| N386. Nurse Practitioner Residency: Pediatrics     | 3       |
| Total  | 21      |

|   |     |
|---|-----|
| N384. Advanced Concepts in Development<br>in Pediatric Nursing Practice | 3   |
| N385. Advanced Nursing Care of Children with Major Illnesses            | 3   |
| Total   | 27* |

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\*If a candidate has an MSN with a clinical major but desires the NP post-master's certificate in a different area, or if the candidate has an MSN in administration, the two clinical courses (6 credits) in the new area will also be required.



FAMILY NURSING

| Nurse Practitioner                                 | Credits |
|--|---------|
| N352. Physical Assessment and Diagnostic Reasoning | 4       |
| N354. Common Acute and Chronic Health Problems I   | 4       |
| N355. Common Acute and Chronic Health Problems II  | 4       |
| N356. Clinical Pharmacology and Interventions      | 3       |
| N357. Selected Topics in Advanced Pathophysiology  | 3       |
| N393. Child Health in Family Care                  | 3       |
| N394. Sexual and Reproductive Health               | 3       |
| N395. Family Nurse Practitioner Residency          | 4       |
| Total  | 28      |



## *Courses of Instruction*



## Courses of Instruction

**301. Theoretical Foundations of Advanced Nursing Practice.** This course is designed to explore the theoretical bases for development of the advanced practice nurse and advanced practice. The focus will be the application of theoretical and conceptual frameworks to guide decision making for culturally diverse populations with a variety of problems to achieve desired outcomes. A variety of developmental, systems, psychodynamic, physiological, and nursing theories and conceptualizations relevant to health and illness care will be presented. Fall. 3 units. *Brundage, McIntire, and Wallsten*

**302. Nursing Informatics.** An introduction to computer technology in the health care arena with a focus on selected computer applications commonly used in the management of health care information. The automation of data management and its impact on nursing administration, education, practice, and research are addressed in the context of information systems and nursing informatics. Fall, spring. 2 units. *Hewitt*

**303. Issues in Contemporary Health Care Organizations.** Survey of key concepts that form the bases for understanding health care institutions and the environment in which they exist. Current issues affecting health care institutions within the context of the financial and political systems will be analyzed in relation to their impact on advanced nursing practice. Steps to prepare the advanced practice nurse to negotiate an independent contract will be introduced. Fall, spring. 3 units. *Staff*

**307. Research Methods.** Focuses on research methods needed for systematic investigation and expansion of nursing knowledge. How to critically read research and develop a research proposal will also be studied. Fall, spring. 2 units. *Champagne and Turner*

**308. Applied Statistics.** Emphasizes the application and interpretation of statistical procedures used in health care and nursing research. Data management and the relationship between research design and statistical techniques will also be studied. Spring. Prerequisite: Nursing 307 or consent of instructor. 2 units. *Champagne*



**312. Research Utilization in Advanced Nursing Practice.** The focus of this course is upon methods of implementing research findings to solve identified clinical problems. Students will obtain skill in developing research-based protocols and in using research methods to evaluate nursing care. Spring, summer. Prerequisites: Nursing 307 and 308, or consent of instructor. 3 units. *Champagne and Hawthorne*

**313. Thesis.** 1 to 6 units. Fall, spring, summer. Variable credit. *Staff*

**314. Nonthesis Option.** 1 to 6 units. Fall, spring, summer. Variable credit. *Staff*

**316. Scientific Writing.** This course provides a review of the principles and practice of scientific writing, with emphasis on research proposals, theses, other scientific papers, and articles for publication. Students are expected to complete a proposal for a thesis or a nonthesis option, an article, or other scientific work as part of the course. Fall, summer. 3 units. *Tornquist*

**317. Women and Health.** Explore selected health related topics of interest to women in their historic, cultural, and biologic contexts in a seminar format. Consent of instructor required. 3 units. *Brundage*

**323. Foundations of Advanced Acute/Critical Care Nursing.** Provides the information underpinning patient responses to common critical illnesses approached through an integration of physiologic, pathophysiologic, and other relevant theories. Course focuses on concepts and theories needed for skilled advanced nursing practice for patients and their families in acute and critical care settings. Topics include pulmonary, neuroendocrine, renal, hepatic, and gastrointestinal problems and also trauma, multi-organ failure, and immunosuppression. Summer. Prerequisite: Nursing 357 or consent of instructor. 3 units. *Brundage*

**325. Clinical Nurse Specialist Practicum: Acute/Critical Care Nursing.** Provides the student with supervised practice as a clinical nurse specialist. Emphasis is upon the development of the domains and competencies of clinical nurse specialty practice within acute care settings. Students specialize in nursing care of selected patient populations. Fall, spring, summer. Prerequisites: Nursing 323, 352, 356, and 357. 3 units. *Brundage, Hawthorne, and Hickey*

**326. Nurse Practitioner Residency: Acute and Chronic Illness Management.** Provides the student with supervised practice as a nurse practitioner. Emphasis is upon the development of the domains and competencies of nurse practitioner practice in both acute and primary care settings. Activities also emphasize the management of major acute and chronic illnesses. 1 to 4 units. Fall, spring, summer. Prerequisites: Nursing 323, 352, 354, 355, 356, and 357. Variable credit. *Brundage, Hawthorne, and Wilkman*

**327. Advanced Management of Patients with Cardiovascular Diseases.** This course focuses on indepth pathophysiology and management of patients with major cardiovascular disorders. Content includes diagnostic and treatment options, recovery of patients following major cardiac events, symptom management during chronic illness, and prevention of disease. Students will also obtain skill in ECG interpretation and cardiac physical exam. Prerequisites: Nursing 352 and 357. 3 units. *Hawthorne*

**330. Oncology Nursing I: Epidemiology and Pathophysiology.** Focus is on the epidemiology, pathophysiology, and biobehavioral aspects of cancer across the adult years. Major topics include cancer physiology, prevention, detection, role of defenses, treatment, and responses to cancer. Spring, summer. 3 units. *McIntire*

**332. Oncology Nursing II: Symptom and Problem Management.** The ONS Guidelines for Oncology Nursing Practice serve as the framework for examination of potential problems and symptom management in cancer patients. Topics include knowledge deficit, information, coping, comfort, nutrition, protective mechanisms, mobility, elimi-

nation, sexuality, ventilation, circulation, and managed care. Case management and case studies are used in seminars. Fall, summer. Prerequisite: Nursing 330. 3 units. *McIntire*

**334. Clinical Nurse Specialist Residency: Oncology.** A clinical practicum in which students specialize in their interest areas, choosing among ambulatory/clinic care, inpatient care, bone marrow transplant care, community/preventive care, home care, hospice care, and care of persons with HIV and AIDS. Case management, care maps, case studies, and ONS Guidelines for Oncology Nursing Practice serve as formats for the practicum and seminars. Fall, spring, summer. Prerequisites: Nursing 330, 332, 352, 356, and 357. 3 units. *McIntire*

**335. Nurse Practitioner Residency: Oncology.** A clinical residency in which students specialize in the domains and competencies of the adult practitioner in oncology nursing. The areas include: managing patient health illness in ambulatory and acute inpatient settings, monitoring quality care, organizational and role competencies, healing and teaching roles. 1 to 4 units. Fall, spring, summer. Prerequisites: Nursing 330, 332, 352, 354, 355, 356, and 357. Variable credit. *McIntire*

**340. Nursing Systems Administration I.** Focuses on the theoretical bases for developing and maintaining nursing systems in health care/health related institutions. Development of management skill serves as the basis for further inquiry and development of the nurse administrator role. Problem solving methodology is used to develop strategies for dealing with issues from the internal and external environment of health care institutions. Fall. 3 units. *Havens*

**344. Nursing Systems Administration II.** Focuses on the theoretical bases of leadership in facilitating the development of professional nursing practice. Development, maintenance, and supervision of nursing systems in health care/health related institutions are discussed. Regulation and legal tenets from the external environment and their impact on the administration of nursing systems are emphasized. Spring. Prerequisite: Nursing 340. 3 units. *Havens*

**345. Nursing Administration Residency.** The residency builds upon students' prior knowledge and experience in nursing administration. The intent is to develop independent problem solving skills while under the guidance and mentorship of a practicing nurse administrator. The minimum required credits are three with a maximum of nine credits for those needing additional learning experiences with a preceptor. 3 to 9 units. Summer. Prerequisites: Nursing 340 and 344. Variable credit. *Havens*

**348. Financial Management and Budget Planning.** Designed for managers in complex organizations. Focuses on the knowledge and skills needed by the nurse manager to plan, monitor, and evaluate budget and fiscal affairs for a defined unit or clinical division. Health care economics, personnel, and patient activities are analyzed from a budgetary and financial management perspective within an environment of regulations and market competition. Spring. Prerequisite: Nursing 303 suggested. 4 units. *Zelman*

**352. Diagnostic Reasoning and Physical Assessment in Advanced Nursing Practice.** Combines lecture and laboratory experiences to develop advanced skills in assessment of physical, cognitive, nutritional, and functional domains. Nurse-patient interaction, data collection, and diagnostic reasoning are emphasized. Consent of instructor required. Fall, spring. 4 units. *Hawthorne, Lorimer, Ouimette, and Wilkman*

**354. Managing Common Acute and Chronic Health Problems I.** The course emphasizes assisting patients to reach or maintain their highest level of health and functioning. The focus will be on health promotion, health maintenance, and primary care management of respiratory, cardiac, gastrointestinal, and mental health problems encountered by patients and their families. The pharmacological management of com-

mon problems is systematically integrated into the course. Clinical practicums are in a variety of settings. Practice settings include rural health clinics, home, hospital units, and long-term care facilities. Advanced practice role development is incorporated into the course through care management seminars and supervised clinical practice. Spring. Prerequisite: Nursing 352; prerequisite/concurrent: Nursing 356. 4 units. *Ouimette*

**355. Managing Common Acute and Chronic Health Problems II.** The course emphasizes assisting patients to reach or maintain their highest level of health and functioning. The focus will be on health promotion, health maintenance, and primary care management of common skin disorders, arthritic, neurologic, gynecologic, anemia, and endocrine problems encountered by patients and their families. The pharmacological management of common problems is systematically integrated into the course. Clinical practicums are in a variety of settings. Practice settings include rural health clinics, home, hospital units, and long-term care facilities. Advanced practice role development is incorporated into the course through care management seminars and supervised clinical practice. Summer. Prerequisites: Nursing 352 and 356. 4 units. *Ouimette*

**356. Clinical Pharmacology and Interventions for Advanced Nursing Practice.** The course is a combination of lecture and case analyses designed to increase assessment and management skills related to pharmacological management of patients with a variety of common acute and chronic health problems. Data collection and diagnostic reasoning are emphasized in relation to drug selection, patient/family education, monitoring, and evaluation of pharmacological interventions. Spring. 3 units. *Brundage, Greene, and Kessler*

**357. Selected Topics in Advanced Pathophysiology.** The course focuses on developing an advanced pathophysiological knowledge foundation to understand alterations in biological processes that affect the body's dynamic equilibrium or homeostasis. This foundation assists the student in physical assessment and clinical reasoning to differentiate normal from abnormal physiological function and to consider causality for understanding underlying pathophysiological alterations in illness for the management of patients in advanced clinical practice. Topics selected will provide the basis for understanding pathophysiology of common health problems and complex physiological alterations encountered in advanced clinical practice. Fall. 3 units. *Staff*

**358. Advanced Physiology.** Focuses on developing an advanced knowledge base to understand normal human physiological phenomena. Summer. Prerequisite: Bachelor of Science in Nursing or Bachelor of Science in related area. 3 units. *Staff*

**360. Concepts of Teaching and Learning.** Focuses on the key concepts and principles that form the bases for the teaching and learning process. Educational theories of teaching and learning, situations and issues serve as the framework for developing instructional strategies used in advanced nursing practice roles. Spring or summer. 3 units. *McIntire*

**362. Ethics in Nursing.** Focuses on the historical development of ethics in nursing, analysis of moral language, codes of ethics, frameworks for ethical decision making with case analysis, and strategies for discussion of ethics in nursing. Spring or summer. 3 units. *Staff*

**363. Management of Adult Critically Ill Patients.** Focuses on pathophysiological mechanisms, clinical decision making, and treatment modalities for managing common problems seen in critically ill patients. Integration of technological aspects of care is emphasized in both the didactic and clinical components of the course. Consent of instructor required. Prerequisites: Nursing 352, 354, 355, 356, and 357. 3 units. *Hickey*





**364. Management of Acutely/Critically Ill Adult Neuroscience Patients.** Focuses on pathophysiological mechanisms, clinical decision making, and treatment modalities for the management of health problems seen in acutely/critically ill neuroscience patients. Consent of instructor required. Spring. Prerequisites: Nursing 352, 354, 355, 356, 357, and 363. 3 units. *Hickey*

**365. Acute Care Nurse Practitioner Residency.** Focuses on synthesis of theory and implementation of the acute care nurse practitioner role within a collaborative model of practice with patients in acute and critical care settings. Consent of instructor required. 1 to 4 units. Fall. Prerequisites: Nursing 352, 354, 355, 356, 357, 363, and 364. Variable credit. *Hickey*

**370. Social Issues, Health, and Illness in the Aged Years.** Examines diversity in development and adaptation to environmental, social, psychological, and biological changes. Theories of aging, health and aging, intimacy and sexuality, rural-urban health care patterns, minority health care patterns, demographic trends, and death, dying, and loss are discussed. Spring. 3 units. *Wallsten*

**375. Nurse Practitioner Residency: Gerontology.** The residency provides GNP students with concentrated clinical opportunities. Emphasis is on clinical decision making, practice issues, and organizational management. Residency sites and associ-

ated preceptors are arranged by faculty. 1 to 4 units. Fall, spring, summer. Prerequisites: Nursing 352, 354, 355, 356, 357, 370, and 376. Variable credit. *Ouimette and Wallsten*

**376. Managing Care of the Frail Elderly.** Emphasizes assessment, rehabilitation, and management of complex problems of elders who reside in community and institutional settings. Research projects and innovative care strategies are explored. Organizational and managerial effectiveness and consultative roles of the GNP/GCNS are examined. Fall. Prerequisites: Nursing 352, 354, 355, 356, and 357. 3 units. *Ouimette and Wallsten*

**383. Clinical Nurse Specialist Practicum: Pediatrics.** Supervised clinical practicum exploring the role of the clinical nurse specialist in a pediatric setting of the student's choice. Fall, spring, summer. Prerequisites: Nursing 352, 356, 357, 384, and 385. 3 units. *Lorimer and Oehler*

**384. Advanced Concepts in Development in Pediatric Nursing Practice.** Focuses on the importance of developmental issues in the advanced practice of pediatric nursing. Normal cognitive, motor, social/emotional, and language development and the usual developmental challenges of each age group are addressed in the context of health maintenance and management of illness. Spring. Prerequisite: Nursing 352. 3 units. *Lorimer and Oehler*

**385. Advanced Nursing Care of Children.** This course addresses societal and family issues that impact on the maintenance of health in children and on complex care management by the advanced pediatric nurse practitioner. Summer. Prerequisites: Nursing 352 and 384. 3 units. *Lorimer and Oehler*

**386. Nurse Practitioner Residency: Pediatrics.** Supervised clinical practice in an approved setting which allows the opportunity for practice as a pediatric nurse practitioner. 1 to 4 units. Fall, spring, summer. Prerequisites: Nursing 352, 354, 355, 356, 357, 384, and 385. Variable credit. *Friedman, Lorimer, and Oehler*

**393. Child Health in Family Care.** This course focuses on children from infancy to adolescence within the contextual frameworks of family, school, and community. It addresses growth and development, health maintenance, and anticipatory guidance needs of various age groups. The role of the family nurse practitioner in the management of common health problems of children is included. The clinical practice component of the course will be in primary care settings that serve children; public health departments, school-based clinics, public and private family and pediatric practice sites, rural health clinics, and developmental evaluation centers. Prerequisites: Nursing 352, 354, 355, 356, and 357. 3 units. *Friedman and Greene*

**394. Sexual and Reproductive Health.** Course focuses on women and men from adolescence through old age within the context of their sexual and reproductive development. Addresses issues related to development, family, and health maintenance, as well as common sexual and reproductive health problems of various age groups. The role of the family nurse practitioner in the management of preconceptual, prenatal, and postnatal care of women and their families is included. The clinical practice component of the course will be in primary care settings that serve women and men at different points in the sexual and reproductive continuum. Prerequisites: Nursing 352, 354, 355, 356, and 357; current BCLS including Heimlich maneuver. 3 units. *Friedman and Greene*

**395. Family Nurse Practitioner Residency.** This residency occurs in a clinical setting with the student having the mentorship of either a nurse practitioner or primary care physician. Seminars are conducted to allow the student to synthesize learning from clinical applications of advanced practice. The student is expected to perform health assessments, order and interpret diagnostic tests, determine a plan of care for family members, collaborate with the health team, and refer patients to other health care

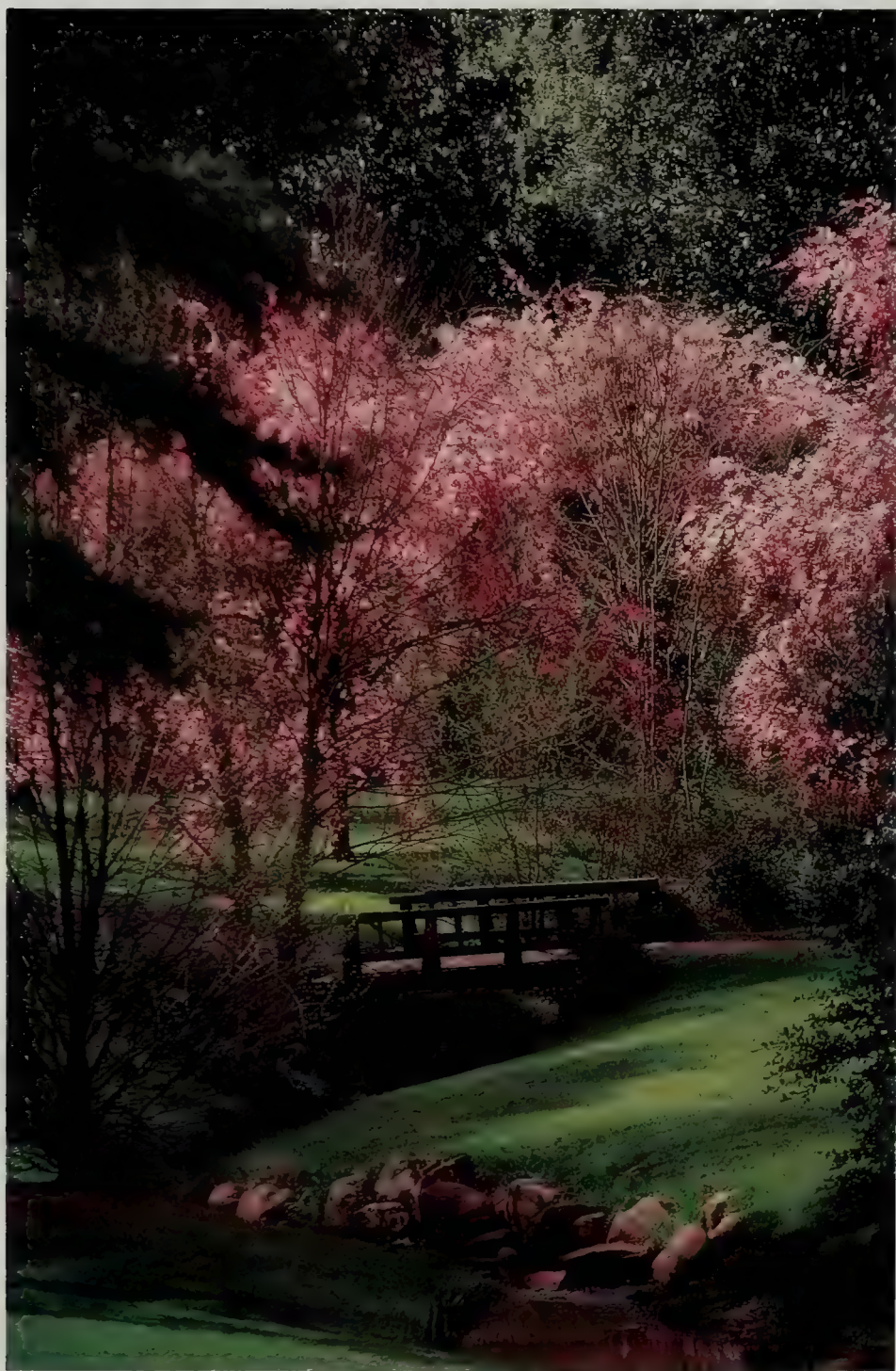
providers when appropriate. 1 to 4 units. Fall, spring, summer. Prerequisites: Nursing 352, 354, 355, 356, 357, 393, and 394. Variable credit. *Friedman and Greene*

**399. Selected Topics or Independent Study.** Students select a topic of professional interest within the specialty area or in support of the specialty area, to be studied with a faculty member. Specific objectives, evaluation method, and other requirements are determined prior to registering for the course of study. Consent of instructor required. 1 to 3 units. Fall, spring, summer. Prerequisite: matriculation into nursing curriculum. Variable credit. *Staff*



## *Financial Aid*

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## Financial Aid

In today's economy, many students find it necessary to work while attending graduate school. At the Duke University School of Nursing, we do all we can to make this as convenient as possible. Class scheduling allows the part-time student to attend two courses a semester. Courses typically meet once a week with most courses meeting on either Tuesday, Wednesday, or Thursday.

Students who need financial assistance to enroll in the School of Nursing are encouraged to apply. The procedures to follow are outlined below, as are the major assistance programs.

**Application.** A prospective student who desires to be considered for financial aid (traineeships, scholarships, or loans) should indicate this on the application form for admission. Financial aid information and appropriate forms will be forwarded to the prospective student by the School of Nursing financial aid specialist upon offer of admission. Decisions regarding financial aid awards are made in writing to the student.

**Student Budget.** The student budget, established as a basis for assistance, includes tuition based on full-time enrollment for the twelve-month period, required fees and insurance, lodging, food, and modest personal expenses. If a student is enrolled for part-time study, the budget is prorated.

**Adjustments to Aid Award.** At any time after the financial aid application has been submitted, or an award made, adjustments may be made by the school if a student's estimated resources cease to exist or fail to materialize. Similarly, if a student receives funds that were not anticipated at the time of the application, the financial aid award will be reduced accordingly.

**Duke Educational Assistance and Nursing Services Tuition Reimbursement.** After one year of employment, the Duke University Tuition Assistance Program be-

comes available. This provides 50 percent tuition assistance during the second year of employment and 70 percent from the beginning of the third year on. For students who have become Duke University Nursing Service employees, there are added benefits after an initial probationary period.

Duke University and the Department of Nursing Service at Duke University Medical Center provide this opportunity as part of a commitment to excellence in advanced nursing preparation. For more information, call the School of Nursing Office of Admissions at 919-684-4248 and/or the Office of Nurse Recruitment at Duke University Medical Center at 919-684-6339.

## Scholarships

Need-based scholarships are available to nursing students meeting the criteria for such scholarships. Merit scholarships are available to outstanding students only.

*Allen Family Nursing Scholarship.* This endowed scholarship fund was given to the School by Mr. and Mrs. Fred Allen in honor of their daughter-in-law, Mrs. James H. Allen (Ruth Register), a 1958 graduate of the Duke University School of Nursing. This scholarship provides assistance to worthy students based on merit as well as financial need.

*Ann Henshaw Gardiner Scholarship.* This scholarship was established by bequest of Miss Gardiner, who was the first full-time faculty member of the Duke University School of Nursing. Scholarships are awarded to students based on scholastic achievement and financial need.

*William Randolph Hearst Nursing Scholarship.* The annual income from this scholarship provides merit scholarships for students enrolled in the oncology and family health nursing programs.

*The Anna L. Hoyns Memorial Scholarship.* The endowment for this scholarship was given to the school by Lucille H. Sherman, Forest Hills Gardens, New York, in memory of her mother, Anna L. Hoyns, to be awarded to deserving students.

*Marla Vreeland Jordan Scholarship Fund.* This fund was established in 1993 under the will of Ervin R. Vreeland in memory of his daughter, Marla, who graduated in 1960 with a BSN degree.

*Helga and Ery W. Kehaya Nursing Scholarship.* The endowment for this scholarship was given to the school by Helga and Ery W. Kehaya of Tequesta, Florida, in appreciation for the excellent nursing care provided at Duke University Medical Center. Awards are made to worthy students.

*School of Nursing Loyalty Scholarship.* The alumni of the Duke University School of Nursing established this fund in recognition of the school's outstanding program. Awards are made to worthy students based on need.

*Margaret Castleberry and William Frank Malone Scholarship.* This endowed scholarship was established by Colonel William Frank Malone as a memorial to his wife, Margaret Castleberry Malone, a Duke University School of Nursing alumna, to provide assistance to students in the graduate nursing program, giving consideration to the greatest need.

*Marian Sanford Sealy Scholarship.* This fund was established as a memorial to Mrs. Sealy by the Durham-Orange County Medical Auxiliary of Durham, North Carolina. Mrs. Sealy was a student at the Duke University School of Nursing from October 1936 to September 1939. She was a staff nurse in Duke Hospital and the wife of Dr. Will C. Sealy, Professor of Thoracic Surgery at Duke University Medical Center. Awards are made to students based on merit.

*School of Nursing Student Aid Scholarship.* This fund was established to provide scholarships to students based on need.

*Teagle Nursing Scholarship.* This scholarship was established by The Teagle Foundation, Inc. to support students pursuing the master's degree in administration of nursing services.



*Emmy Lou Tompkins Scholarship.* This fund was established by Emmy Lou Morton Tompkins (Duke University Class of 1936) in appreciation of the education received by her daughter, Boydie C. Girimont, who graduated from the Duke University School of Nursing in 1962. Scholarship awards are based on scholastic achievement.

*Lettie Pate Whitehead Foundation Scholarship.* This fund was established by Conkey Pate Whitehead as a memorial to his mother. Awards are made for the aid and benefit of female students from nine southeastern states—Georgia, North Carolina, South Carolina, Virginia, Louisiana, Mississippi, Alabama, Tennessee, and Florida.

*Florence K. Wilson Scholarship.* This endowed scholarship was established by the Duke University School of Nursing Alumni in memory of their third dean. Awards are made to worthy students based on need.

## Traineeships

The school annually submits an application for traineeship support to the U. S. Department of Health and Human Services, Health Resources, and Services Administration. If approved and funded, traineeship awards are made to students according to the grant guidelines.

## Loans

Students who are legal residents of North Carolina and out-of-state students in eligible institutions of higher education in North Carolina who are accepted for enrollment or enrolled and maintaining satisfactory progress may apply for a loan through the School of Nursing (contact the School of Nursing Financial Aid Specialist for more information) or from the *College Foundation, Inc. (CFI)*. The types of loans available from CFI are:

*Federal Stafford Loans (Subsidized and Unsubsidized).* The student must complete and file the Free Application For Federal Student Aid (FAFSA) application.

*Federal Supplemental Loans for Students (SLS).* The student does *not* have to demonstrate "need" for these loans.

*Federal PLUS Loans to Parents.* The parent does *not* have to demonstrate need but must not have an adverse credit history and must be able to show the ability to make the required monthly payments.

For more information, contact the Financial Aid Specialist of the School of Nursing at 919-684-3786.

*Tuition and Fees*

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## **Tuition and Fees\***

Tuition for the Duke University School of Nursing Graduate Program is currently \$490.50 per unit, effective fall semester 1995. Part-time tuition is calculated at the same rate. Each full-time student is required to register for a minimum of nine (9) units per semester. Part-time students may register for one to eight units per semester.

Tuition and fees are due and payable at the times specified by the university for that semester and are subject to change without notice. A late registration fee of \$25 is charged for failure to complete registration during the official registration period.

**Application Fee.** A nonrefundable fee of \$50 must accompany the application for admission.

**Tuition Deposit.** A nonrefundable deposit of \$100 must accompany the acceptance of admission. Upon enrollment, the \$100 will be credited toward tuition.

**Parking Fee.** Each student parking a motor vehicle on campus must register it at the beginning of the fall semester in the traffic/parking office at Parking Garage II. A student who acquires a motor vehicle and parks it on campus after academic registration must register it within five calendar days after operation on the campus begins. Students are required to pay an annual parking fee. Students registering a vehicle after January 1 pay a prorated fee.

At the time of registration of a motor vehicle, the state vehicle registration certificate, a valid driver's license, and a student identification card must be presented.

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\*Subject to change.



**Transcript Fee.** All matriculants in the master's program pay a one-time transcript fee of \$30. Certificate students and nondegree students pay a one-time \$15 fee. Nondegree students who later become matriculants in the master's program must then pay an additional \$15 fee so that their total fee is \$30. This fee permits all students and alumni to receive official university transcripts to meet their legitimate needs without additional charge, except for special handling such as express mail.

**The Student Health Fee.** The student health fee for nursing students has been waived since the majority of nursing students already have health insurance (e.g., through employer programs or spouse's program). However, if a nursing student does not have health insurance, she/he should contact the bursar's office for coverage under the Student Health Plan. For fall and spring semesters the fee is currently approximately \$384 (\$192 per semester). For the summer the fee is approximately \$120. Additionally, Duke University offers a student health insurance plan for those not adequately covered by other insurance. This plan is specially designed to complement the coverage provided by the Student Health Fee. Further information about the Student Health Fee and/or the Duke Student Insurance Plan is available from the Student Health Coalition by calling 919-684-3620.

**Graduate and Professional Student Council Fee.** A \$7 fee, paid in fall and spring semesters, provides full year membership.

**Thesis Fee.** The binding fee for theses is currently \$14.95 per copy and is subject to change without notice. A charge of \$5 per copy is assessed for each copy of the thesis that is mailed to a student upon request.

**Audit Fee.** Courses may be audited on a space available basis with the consent of the instructor. Audit fees are \$160 per course. Students registered full time during fall and spring may audit courses without charge. For more information, students should consult the School of Nursing Office of Admissions.

**Computer Lab Fee.** A \$15 per semester fee is assessed for use of the Computer Lab.

**Clinical Lab Fee.** A \$120 fee is assessed for N352, Diagnostic Reasoning and Physical Assessment. This fee is used to cover the expenses of standardized patients, patients for the gynecological exam, and patients for the final examination for the course.

**Continuation of Enrollment Fee.** A \$150 fee is assessed if a student cannot complete a clinical residency type course within the required semester and must extend the residency into the following semester(s).

**Payment of Accounts.** New students are required to pay tuition and fees at the time of matriculation. Following first enrollment in the Graduate Program in Nursing, monthly invoices are sent to each student by the bursar's office. As part of the acceptance of admission to Duke University, the student agrees to pay all invoices upon receipt. Tuition is due no later than five business days before classes begin. A late payment charge is assessed for all charges not paid in full by the due date. That fee is assessed at the rate of 1.25 percent per month applied to the past due balance. A student in default on tuition or fee charges will not be allowed to register for subsequent classes, receive a transcript of academic records, have academic credits certified, be granted a leave of absence, or receive a diploma at graduation. In addition, the student may be subject to withdrawal from school.

**Refunds.** For students who withdraw from school or are withdrawn by the university during fall and spring semesters, refunds of tuition and fees are governed by the following policy:

1. In the event of death, tuition and fees will be fully refunded.

2. In all other cases of withdrawal from the university, students may elect to have tuition refunded or carried forward as a credit for later study according to the following schedule:
  - a. withdrawal before classes start: full refund;
  - b. withdrawal during the first or second week of classes: 80 percent refund (*the student health fee will not be refunded*);
  - c. withdrawal during the third, fourth, or fifth week of classes: 60 percent refund (*the student health fee will not be refunded*);
  - d. withdrawal during the sixth week: 20 percent refund (*the student health fee will not be refunded*);
  - e. withdrawal after six weeks: no refund.
  - f. Tuition charges paid from grants, scholarships, or loans will be restored to those funds on the same *pro rata* basis and will not be refunded or carried forward.
3. If a student changes his or her status from full to part-time, has to drop a course for which no alternative registration is available, drops special fee courses, or drops an audit during the first two weeks of the drop/add period, a full refund may be granted with the approval of the dean. (*The student health fee is nonrefundable.*)

Students not attending a summer term or course(s) for which they have registered, must follow the correct procedure and drop the course(s) prior to the beginning of class, even if they have not paid tuition and fees. Failure to drop the course(s) will result in administrative withdrawal from the summer term at the end of the first three days of the term, and the student will be billed for 20 percent of the tuition plus the health fee (if paid by the student). If tuition and fees have been paid for the summer term, the following refund policies apply:

1. When applications to withdraw from a term or drop a course are received before the first class day of a given term, full tuition and fees will be refunded.
2. When applications to withdraw from a term or drop a course are received during the first three class days of a given term, 80 percent of the tuition will be refunded. There is no charge for drops and adds that result in no change in tuition. The health fee will not be refunded.
3. When applications to withdraw from a term or drop a course are received after the third class day, there will be no refund of tuition and fees.

*Services Available*

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## Living Accommodations

Duke University's Office of Off-Campus Housing, 919-684-5832, provides information about various residential apartment facilities and housing options in the Durham area. Except for assuring that owners sign a statement of nondiscrimination, off-campus property is in no way verified and neither the university nor its agents negotiate between owners and interested parties. Prospective students are encouraged to visit Durham and inspect possible lodgings to compare options.

## Food

Graduate students may dine on campus at any Duke University Food Services (DUFS) facility. DUFS provides cafeterias, restaurants, fast food operations, delis, snack bars, ice cream/dessert shops, and catering services in convenient locations throughout campus.

On West Campus, students may dine in the Blue & White Room (cafeteria), the University Room (cafeteria), the Oak Room (restaurant), the Cambridge Inn (deli, pizza, pastry and dessert shop), the Rathskeller (hamburgers, pasta, and Mexican foods), Burger King (fast foods), and Lick's (ice cream/frozen yogurt). On East Campus, facilities include the East Court Food Mall (a collection of food shops including a grill, oriental food station, salad bar/healthy food shop, pasta area, deli, and a dessert/ice cream shop), and the East Union Cafeteria. The Pub on Central Campus (specialty sandwiches, salads, and beverages) is also available.

Food purchases may be paid in one of three ways: by cash, a dining account, or a flexible spending account. Both the dining account and the flexible spending account allow a student to make purchases on campus by accessing a prepaid account carried on the student identification card, or DukeCard. Information about DukeCard accounts is available from the DukeCard Office, 024 West Union Building, Durham, North Carolina 27706, 919-684-5800.



Further information about campus food service facilities and dining plan options is available from Duke University Food Services, 029 West Union Building, Durham, North Carolina 27706, 919-684-3621.

## Student Health Program

The Duke Student Health Program is administered by the Department of Community and Family Medicine, Duke University Medical Center. Health services are provided by board-certified family physician faculty, physician assistants, and nurse practitioners.

*Pickens Health Center (684-6721)*, located on the corner of Erwin Road and Trent Drive, is the primary location for health care. Students are seen by appointment Monday-Friday, 8:00 A.M.-6:00 P.M., Saturdays from 9:00 A.M.-1:00 P.M., and Sundays from 2:00 P.M.-5:00 P.M. A wide variety of services are available: medical care, GYN clinic, health education, sports medicine, laboratory, pharmacy, travel and immunization, x-rays, cold/flu self-help table, allergy clinic, and nutrition counseling.

Students are encouraged to use the Pickens Health Center as their portal of entry to other health resources when needed, including the specialty clinics at Duke University Medical Center.

**For problems arising after hours, students should call the Infirmary (684-3367).** After consulting with the physician on call, the nurse may advise the student to come to the Infirmary or to the Duke Emergency Department (684-2413) for further evaluation. In the event of an obvious life-threatening emergency, students should go directly to the Emergency Department. If necessary, Duke Public Safety (call 911 or 684-2444) will provide on-campus transportation to the Emergency Department or the Infirmary.

The *Infirmery* (684-3367), located on the fourth floor of Duke University Hospital-South Division, Purple Zone, provides inpatient treatment of illnesses too severe to manage in the residence hall or apartment, but not requiring hospitalization.

The *Health Education* component of Student Health is headquartered at Pickens Health Center (684-6721). Health education staff are available, by appointment, to assist students in making informed decisions that promote their health. Topics may include alcohol and other drug usage, eating and nutrition, sexually transmitted diseases, stress management, and others.

*Sports Medicine Services:* The Student Sports Clinic is located on West Campus, in the basement of Card Gym. A physical therapist is available from 3:00-7:00 P.M. weekdays, on a walk-in basis, to assess exercise-related problems, and to outline short-term treatment plans to aid recovery and help prevent re-injury. The Sports Medicine Clinic is located on the third floor of the Finch-Yeager Building next to Wallace Wade Stadium. Students may be seen there by a Student Health physician, by appointment (684-6721).

*Counseling and Psychological Services (CAPS; 660-1000)* is a complementary service to the Student Health program. Mental health and career counseling services are available, as detailed in the CAPS brochure.

*Confidentiality.* Information regarding the physical or mental health of students is confidential, released only with the student's permission.

Upon arrival on campus, all students receive a detailed brochure about the Student Health Program and the services covered by the Student Health Fee.



## *Student Activities*



## Student Activities

**Graduate and Professional Student Council (GPSC).** The Graduate and Professional Student Council is the representative body for the students of graduate departments and professional schools. The council provides a means of communication between schools and between graduate students and the administration. The council selects graduate students for membership on university committees. Representatives of each department and officers of the council are selected annually.

**Duke School of Nursing Governance.** Students participate in the governance of the School of Nursing through membership in the school's Curriculum Committee, the Recruitment Committee, and *ad hoc* committees as appropriate.

**Sigma Theta Tau.** In the spring of 1972 the Beta Epsilon Chapter of Sigma Theta Tau, the International Honor Society of Nursing, was established at Duke with a charter membership of 100 students, faculty, and alumni.

Sigma Theta Tau is the only international honor society for nursing and is a member of the Association of College Honor Societies. The first chapter was established in 1922. The society recognizes achievement of superior quality, fosters high professional standards, encourages creative work, recognizes the development of leadership qualities and strengthens the individual's commitment to the ideals and purposes of professional nursing. Sigma Theta Tau is an educational organization standing for the best in nursing. Duke University School of Nursing students who meet Sigma Theta Tau's criteria are eligible for induction into the Beta Epsilon Chapter.

**Alumni Association.** Operating from the Alumni House at 614 Chapel Drive, the Duke University General Alumni Association, through its affiliate groups such as local clubs, classes, and school and college alumni associations, links its 72,000 members with the university and one another. The alumni office staff coordinates educational, cultural and social activities; provides avenues for involvement in university affairs; and promotes loyalty and esprit de corps throughout the Duke community. All alumni are automatically members of the association. An active alumnus is one for whom a current mailing

address is on file; a contributing member is one who pays annual dues and becomes involved in class, club, and other alumni activities.

The Alumni Association sponsors many university-wide programs and services. Included among these are student programs, off-campus and on-campus gatherings, *Duke Magazine*, recognition and awards programs, and travel and continuing education opportunities.

**The Women's Center.** The Women's Center, an office serving both women and men, develops activities and programs to address advocacy and support for women's and gender issues. Programming focuses on three specific areas: health, safety, and personal and professional development. The center works in cooperation with other departments, such as the Women's Studies Program and Counseling and Psychological Services, to involve undergraduates, graduate and professional students, and faculty and staff, with primary emphasis on the student population. It also advises diverse students and groups, including sororities and politically oriented groups. Coordinated by a director, in conjunction with an advisory board, the Women's Center is located in the Bryan Center.

**The Mary Lou Williams Center for Black Culture.** Dedicated in memory of the "great lady of jazz" and former artist-in-residence whose name it bears, the center has established its significance as the gathering place on campus where broadly-based issues of social/cultural relevance are addressed to an increasingly larger cross-section of the Duke community. The center's audience include great numbers of students who are prepared to honor the wonder of African-American history and culture, addressed each year in many programs and events celebrating black possibilities and black successes. Among past programs have been art exhibits by renowned African-American artists, musical events, film series, and a number of lecture-discussions of relevant topics. In addition, the center has expanded its programs to include the Asian, Hispanic, Native American and Indian, all of which evoke new possibilities for multicultural appreciation.

**International House.** International House is the center of cocurricular programs for close to six hundred students at Duke from seventy-nine countries, as well as for U.S. American students who are interested in other cultures, are considering study abroad, or are planning to travel outside the United States. The International Association, sponsored by International House, plans social and cultural programs which emphasize personal contact and informal exchange of ideas among students from diverse backgrounds. Included are weekly open houses, with lectures, discussions, films, potluck dinners or parties; and periodic trips outside of Durham.

Programs of International House which assist students from abroad in participating in the life of the Duke and Durham communities include an intensive orientation program at the beginning of the academic year; the International Friend/Host Family Program, in which interested international students may become acquainted with U.S. American families or individuals; Duke Partners, in which an international student is paired with a U.S. American partner for weekly meetings to work on language and life skills; Speakers' Bureau, which arranges for international students to speak at civic and social groups as well as schools in the Durham community; and English conversation classes which meet four hours a week on campus.

International House also has a visa specialist on the staff who works with students from abroad in fulfilling the various immigration and tax formalities involved in coming to Duke. Further information may be obtained from International House, 2022 Campus Drive, 919-684-3585.

**Cocurricular Activities.** Graduate students at Duke University are welcome to use such university recreational facilities as swimming pools, tennis courts, and the golf course, and to affiliate with the choral, dance, drama, music, and religious groups. They



may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities.

A full program of cultural, recreational, and religious activities is presented by the Office of Cultural Affairs, the Duke University Campus Ministry, the Duke University Union, the Office of Student Activities, and recreational clubs. The Duke University Union sponsors a wide range of programs through its committees, which are open to all segments of the campus community. Programs include touring Broadway shows, rock, jazz, and pop concerts; speakers; films; a film-making program; the largest fully student-run television station in the country; art exhibits in three galleries; and a broad program in crafts located in Southgate Dormitory and the Bryan University Center. The Aquatic Center and the East Campus Gymnasium pool are available to students, faculty, and staff families. The handball, racquetball, squash, and tennis facilities and the weight room on East and West Campus are also available. Interested students may participate in softball and other team sports.

The University Center complex includes the Bryan University Center, which houses the Information Center, two drama theaters, a film theater, lounges, stores, meeting rooms, games room, the Rathskeller, art gallery, and other facilities; the West Union, which includes dining facilities; and the Flowers Building, which includes student publications, Page Auditorium, and the university box office.

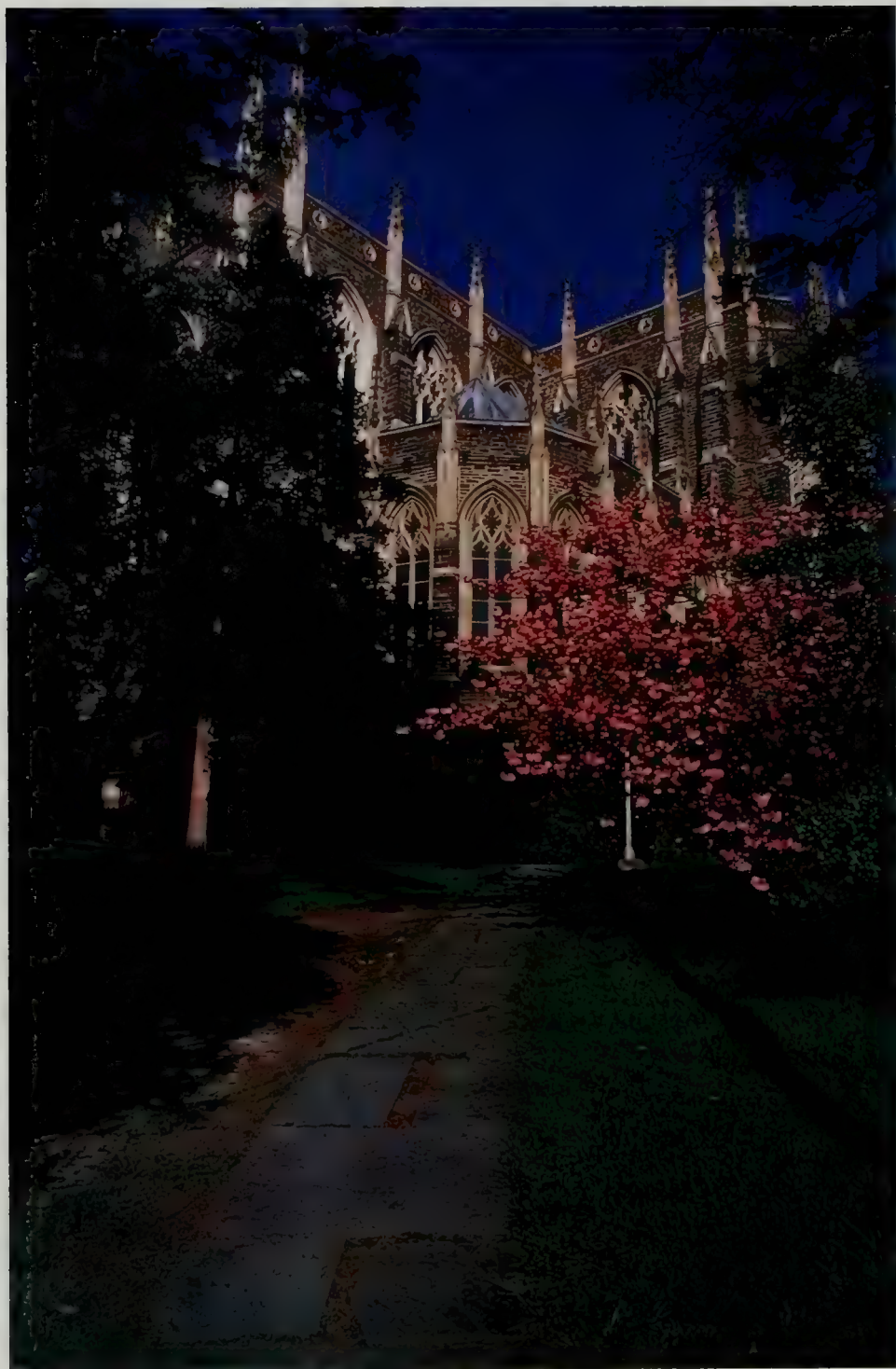
Inquiries should be directed to the Recreation Office, 105 Card Gymnasium; the Office of Cultural Affairs, 109 Page Building; Duke Chapel; the Duke University Union, Bryan University Center; or the Office of Student Activities, Bryan University Center.

Full information regarding the scheduling of major events and programs for the entire year will be found in the Duke University *Yearly Calendar*; detailed and updated information for the fall and spring semesters in the *Duke Dialogue*, available each Friday; updated information for the summer session in the *Summer Session Calendar*, published at the beginning of each summer term; and the *Duke Chronicle*, published each Monday through Friday during the fall and spring and each Thursday during the summer. Copies of the Duke University calendars may be obtained at the information desk, Bryan University Center, or the calendar office, Page Building. The *Summer Session Calendar* is published by the summer session office and is available at convenient locations.

**Religious Life.** The Duke University Chapel is open from 8:00 A.M. until 10:00 P.M. A variety of worship experiences is available throughout the week including the university service of worship at 11:00 A.M. each Sunday, noonday prayer each weekday during term, and Choral Vespers each Thursday at 5:15 P.M.. The Graduate and Professional Student Fellowship, sponsored by Duke Chapel, provides ecumenical fellowship as well as service opportunities for interested students. Many religious organizations are represented by Duke Campus ministry, which invites graduate students to participate in the various religious life groups. The office of the dean of the Chapel, the assistant dean of the Chapel, or Campus Hillel can provide details concerning religious opportunities on campus and the various religious organizations (including Buddhist; Christian [Eastern Orthodox, Protestant, and Roman Catholic]; Hindu; Jewish; and Muslim) in the Durham area.

## *Standards of Conduct*

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## Standards of Conduct

Duke University expects and requires of all its students cooperation in developing and maintaining high standards of scholarship and conduct.

Students are expected to meet academic requirements and financial obligations, as specified elsewhere in this bulletin, in order to remain in good standing. Certain nonacademic rules and regulations must be observed also. Failure to meet these requirements may result in dismissal by the appropriate officer of the university.

The university wishes to emphasize its policy that all students are subject to the rules and regulations of the university currently in effect or that, from time to time, are put into effect by the appropriate authorities of the university. Students, in accepting admission, indicate their willingness to subscribe to and be governed by these rules and regulations and acknowledge the right of the university to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate for failure to abide by such rules and regulations or for conduct judged unsatisfactory or detrimental to the university. University authorities will take action in accordance with due process.

### THE DUKE STUDENT HONOR COMMITMENT

The Honor Commitment is a personal commitment of honor and integrity which is self imposed and not enforced by an outside authority. All graduate students in the School of Nursing pledge to follow the Honor Commitment.

The commitment reads as follows:

*A unique aspect of a liberal education is its attempt to instill in the student a sense of honor and high principles that extends beyond academics. An essential feature of Duke University is its commitment to an atmosphere of integrity and ethical conduct. As a student of Duke University, I accept as my personal responsibility the vigorous maintenance of high standards of honesty, truth, fairness, civility, and concern for others.*

*My devotion to integrity establishes that I will not cheat in academic work and that I will adhere to the established and required community code of conduct. According to the dictates of my own conscience, I will report behavior in violation of such established standards. In addition and beyond the requirements of any code or law, I confirm my own commitment to personal honor and integrity in all matters large and small. Even though the idea of honor is an abstract one, by implementing this ideal, I join the men and women of Duke University in making the concept of honor a reality.*



## **STUDENT DISCRIMINATION GRIEVANCE PROCEDURES**

The Duke University policy on nondiscrimination is set forth on the credits page of this bulletin. Procedures for investigation and remedy of any complaint and for appeal of any decision including the evaluation or grading of student performance are detailed in the Graduate Student Handbook or available in the Office of the Dean.

## **CONFIDENTIALITY OF STUDENT RECORDS**

Duke University adheres to a policy permitting students access to their educational records and certain confidential financial information. Students may request in writing review of any information contained in their educational records and may, using appropriate procedures, challenge the content of these records. An explanation of the complete policy on educational records may be obtained from the registrar's office.

No information, except directory information (see below), contained in any student record is released to persons outside the university or to unauthorized persons on the campus, without the written consent of the student. It is the responsibility of the student to provide the Office of the Registrar and other university offices, as appropriate, with the necessary specific authorization and consent. For students in the School of Nursing, authorization forms are available in the Office of the Dean.

Directory information includes name, addresses, telephone listing, date and place of birth, photograph, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and most recent previous educational institution attended. This information may be released to appear in public documents and may otherwise be disclosed without student consent unless a written request not to release this information is filed in the Office of the Registrar by the end of the second week of classes each term.









Bulletin of Duke University

(JPSP 073-680)

NC 27708

POSTMASTER send change of address

to: Office of Admissions

School of Nursing Graduate Program

Box 3322, Medical Center

Duke University

Durham, NC 27710

Second Class

Postage

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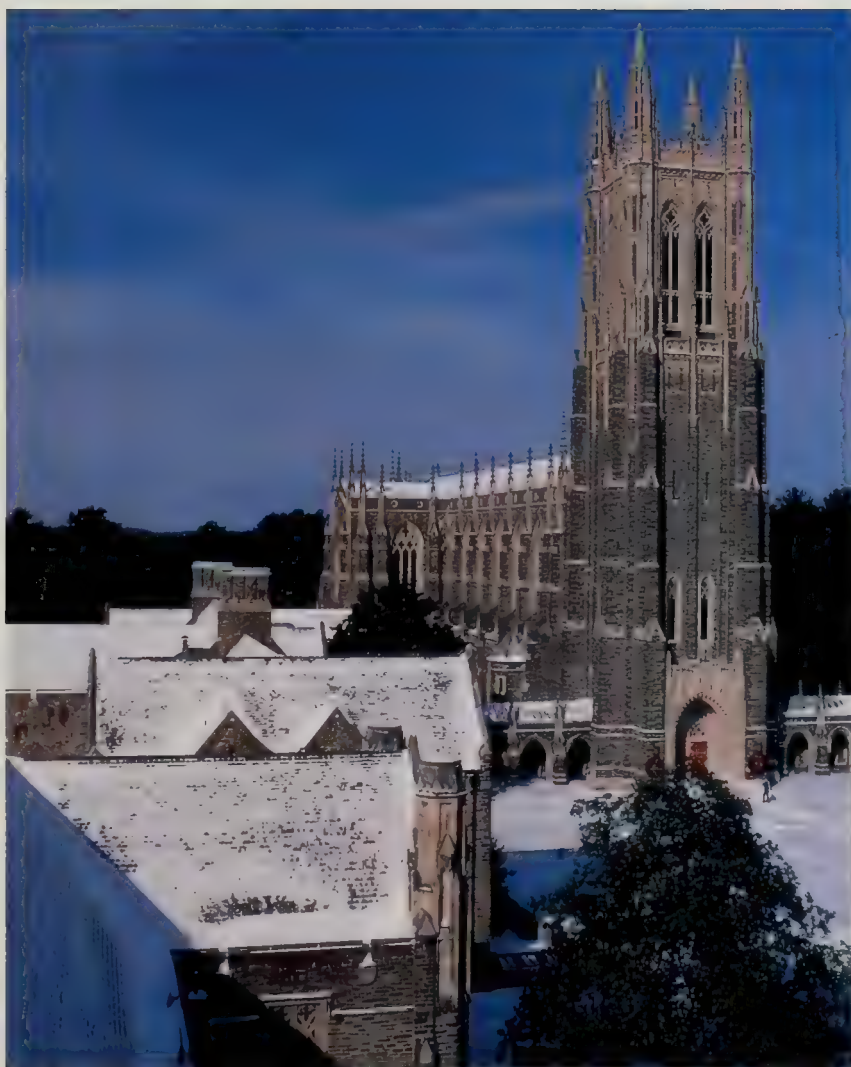
Durham, NC

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*bulletin of*  
**Duke University**  
**1996-98**

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*Graduate School*







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*bulletin of*  
**Duke University**  
**1996-98**

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*Graduate School*

ACADEMIC LIAISON

A. Leigh DeNeef  
Associate Dean

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COVER PHOTOGRAPH

University Photographers

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The information in the bulletin applies to the academic year 1996-98 and is accurate and current, to the best of our knowledge, as of January 1996. Inasmuch as changes may be necessary from time to time, this bulletin and the matters contained therein are not binding on Duke University, and this bulletin should not be construed as constituting a contract between Duke University and any individual. The University reserves the right to change programs of study, academic requirements, lecturers, teaching staffs, the announced University calendar, and other matters described in the bulletin without prior notice.

Duke University does not discriminate on the basis of race, color, national and ethnic origin, handicap, sexual orientation or preference, gender, or age in the administration of educational policies, admission policies, financial aid, employment, or any other university program or activity. It admits qualified students to all the rights, privileges, programs, and activities generally accorded or made available to students. For further information, call Leonard Beckum, Equal Opportunity Officer, (919) 684-4736.

Duke University is a member of the North Carolina Association of Independent Colleges and Universities, the Southern Association of Colleges and Schools, and the Association of American Universities. Additionally, the Graduate School is affiliated with the Association of Graduate Schools and the Council of Graduate Schools.

*The Bulletin of Duke University*, Volume 68, includes the following titles: *The Fuqua School of Business*; *The School of the Environment*; *Undergraduate Instruction*; *The Graduate School*; *The Medical Center*; *The Divinity School*; *Information for Prospective Students*; *Information for Graduate Students*; *Summer Session*; *Graduate Program in Nursing*; *The School of Law*; and *Information and Regulations*.

Information that the University is required to make available under the Student Right to Know and Campus Security Acts may be obtained from the Office of University Relations at 684-2823 or in writing at 615 Chapel Drive, Duke University, Durham, North Carolina 27706.

Volume 68

Number 2A

March 1996

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# Calendar of the Graduate School\*

## Summer 1996†

|               |           |  |
|---------------|-----------|--|
| <b>May</b>    |           |  |
| 16            | Thursday  | —Summer Session Term I classes begin.  |
| <b>June</b>   |           |  |
| 26            | Wednesday | —Summer Session Term I final examinations begin.   |
| 27            | Thursday  | —Summer Session Term I final examinations end.   |
| <b>July</b>   |           |  |
| 1             | Monday    | —Summer Session Term II classes begin.   |
| 1             | Monday    | —Final date for filing with the Graduate School the intention to receive an advanced degree in September.  |
| <b>August</b> |           |  |
| 1             | Tuesday   | —Final date to submit for Graduate School approval master's theses and Ph.D. dissertations for a September 1996 degree.  |
| 9             | Friday    | —Summer Session Term II final examinations begin.  |
| 9             | Friday    | —Final date for completing degree requirements for an advanced degree to be awarded September 1996. All final copies of examined and signed theses and dissertations must be returned to 013 Perkins Library by this date. |
| 10            | Saturday  | —Term II final examinations end.   |
| 15-24         |           | Oral proficiency interviews for all incoming students whose native language is not English. Details available through International House.   |

## Fall 1996

|                  |           |   |
|------------------|-----------|---|
| <b>August</b>    |           |   |
| 30               | Friday    | —New Graduate Student Orientation.  |
| 30               |           | Graduate and Professional School Opening Convocation, 5:00 p.m., Duke Chapel.   |
| 31               | Saturday  | —English examination required for all incoming students whose native language is not English. Examination will begin in Room 139, Social Sciences Building, at 10:00 a.m. |
| <b>September</b> |           |   |
| 3                | Tuesday   | —Fall semester classes begin at 8:00 a.m.   |
| 16               | Monday    | —Last day for drop/add. No late registrations will be taken after this date.  |
| <b>October</b>   |           |   |
| 18               | Friday    | —Fall break begins at 7:00 p.m.   |
| 23               | Wednesday | —Classes resume at 8:00 a.m.  |
| <b>November</b>  |           |   |
| 1                | Friday    | —Final date for filing with the Graduate School the intention to receive an advanced degree in December 1996.   |
| 1                | Friday    | —Last day for completion of applications to the spring 1997 semester.   |
| 27               | Wednesday | —Thanksgiving recess begins at 12:40 p.m.   |

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\*The dates in this calendar are subject to change. Information on registration dates is available from the Office of the University Registrar.

†The School of the Environment, the Fuqua School of Business, the Marine Laboratory, and the Department of Physical Therapy have different term lengths and/or starting dates during the summer; consult the appropriate bulletins and schedules.

**December**

- 2 Monday—Classes resume at 8:00 a.m.
- 6 Friday—Graduate classes end at 7:00 p.m.
- 11 Wednesday—Final date to submit master's theses and Ph.D. dissertations for Graduate School approval.
- 7-15 Saturday-Sunday—Graduate reading period; length of 200-level course reading period is determined by the instructor.
- 15 Sunday—Founders' Day.
- 16 Monday—Final examinations begin.
- 20 Friday—Final date for completing degree requirements for an advanced degree to be awarded December 1996. All final copies of examined and signed theses and dissertations must be returned to 013 Perkins Library by this date.
- 21 Saturday—Final examinations end.
- 31 Tuesday—Postmark deadline for applications to all programs (see application materials), fall 1997.

**Spring 1997****January**

- 11 Saturday—English language proficiency examination for all incoming students whose native language is not English from 10:00 a.m.-12:00 noon in Room 317 Allen Building.
- 16 Thursday—Spring semester classes begin at 8:00 a.m.
- 29 Wednesday—Final day for drop/add. No late registrations will be allowed after January 29.

**February**

- 3 Monday—Final date for filing with the Graduate School office the intention to receive an advanced degree in May 1997.

**March**

- 14 Friday—Spring recess begins at 7:00 p.m.
- 24 Monday—Classes resume at 8:00 a.m.

**April**

- 1 Tuesday—Final date for submitting dissertation for the Ph.D. degree for Graduate School approval.
- 15 Tuesday—Final date for submitting theses for master's degrees for Graduate School approval.
- 25 Friday—Graduate classes end at 7:00 p.m.
- 26-5\4 Saturday-Sunday—Graduate reading period; length of 200-level course reading period is determined by the instructor.

**May**

- 2 Friday—Final day for completing degree requirements for an advanced degree to be awarded in May 1997. All final copies of examined and signed theses and dissertations must be returned to 013 Perkins by this date.
- 5 Monday—Final examinations begin.
- 10 Saturday—Final examinations end.
- 16 Friday—Commencement begins.
- 18 Sunday—Graduation exercises. Conferring of degrees.

**Summer 1997****May**

- 22 Thursday—Summer Session Term I classes begin.

**July**

- 1 Tuesday—Final date for filing with the Graduate School the intention to receive an advanced degree in September 1997.
- 3 Thursday—Summer Session Term I examinations end.
- 7 Monday—Summer Session Term II classes begin.

**August**

- 1 Friday—Final date for submitting theses and dissertations for Graduate School approval.



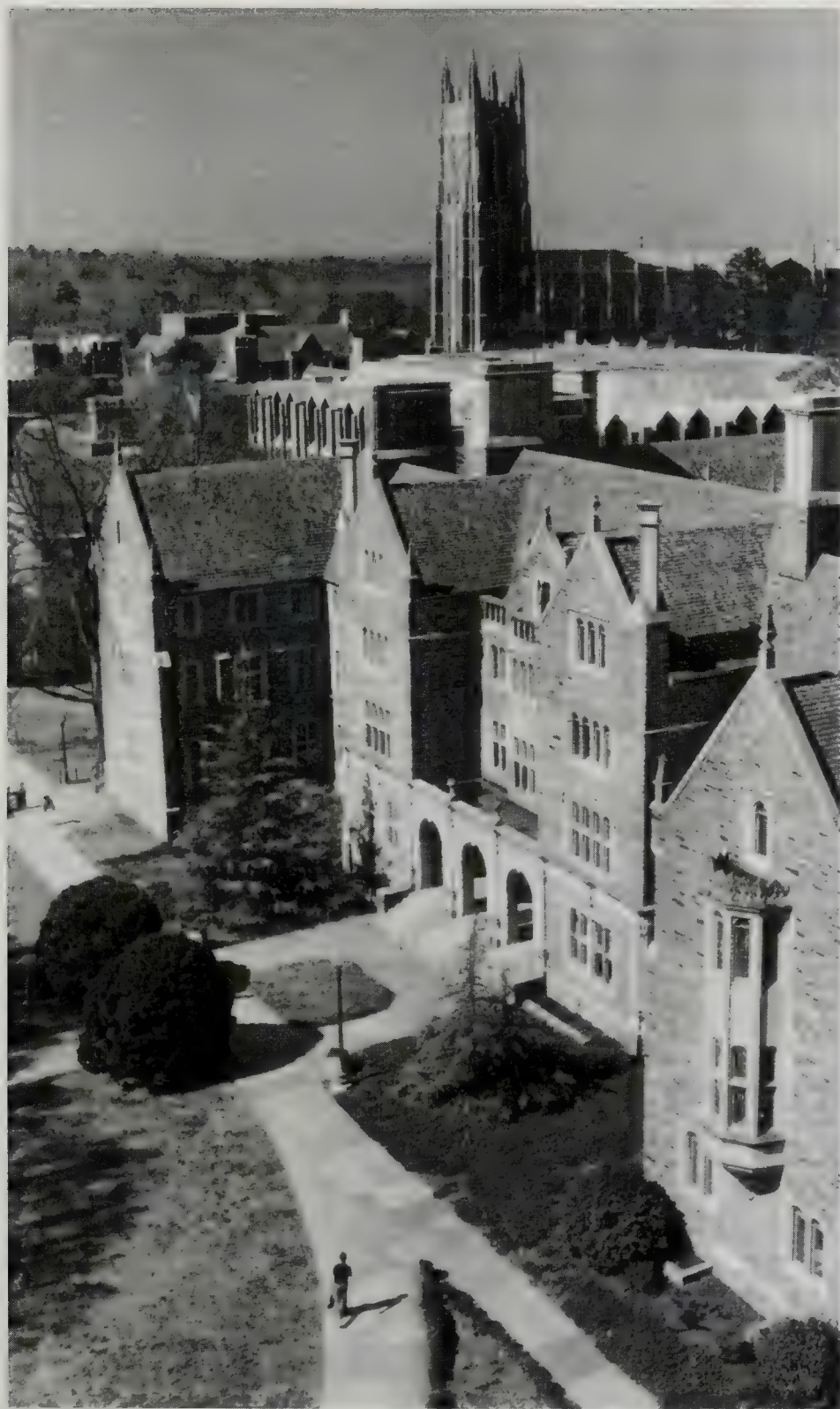
- 15 Friday—Final date for completing degree requirements for an advanced degree to be awarded in September 1997. All final copies of examined and signed theses and dissertations must be returned to 013 Perkins by this date.
- 16 Saturday—Summer Session Term II examinations end.

### Fall 1997

- August**
- 29 Graduate and Professional School Convocation.
- September**
- 2 Fall semester classes begin.
- November**
- 3 Monday—Final date for filing with the Graduate School the intention to receive an advanced degree in December 1997.
- December**
- 10 Wednesday—Final date for submitting theses and dissertations for Graduate School approval.
- 14 Sunday—Founders' Day.
- 19 Friday—Final date for completing degree requirements for an advanced degree to be awarded in December 1997. All final copies of examined and signed theses and dissertations must be returned to 013 Perkins by this date.
- 20 Saturday—Fall Semester examinations end.
- 31 Wednesday—Postmark deadline for applications to all programs (see application materials), fall 1998.

### Spring 1998

- January**
- 15 Thursday—Spring Semester classes begin.
- May**
- 9 Saturday—Spring Semester examinations end.
- 17 Sunday—Conferring of degrees.



# University Administration

## GENERAL ADMINISTRATION

Nannerl Overholser Keohane, Ph.D., *President*  
John W. Strohbehn, Ph.D., *Provost*  
Ralph Snyderman, M.D., *Chancellor for Health Affairs and Dean, School of Medicine*  
Tallman Trask III, Ph.D., *Executive Vice-President*  
Eugene J. McDonald, LL.M., *Executive Vice-President-Asset Management*  
John F. Burness, A.B., *Senior Vice-President for Public Affairs*  
John J. Piva, Jr., B.A., *Senior Vice-President for Alumni Affairs and Development*  
Charles E. Putman, M.D., *Senior Vice-President for Research Administration and Policy*  
Myrna C. Adams, M.Ed., J.D., *Vice-President for Institutional Equity*  
John F. Adcock, B.S., *Vice-President and Corporate Controller*  
Tom A. Butters, B.A., *Vice-President and Director of Athletics*  
Janet Smith Dickerson, M.Ed., *Vice-President for Student Affairs*  
Joseph S. Beyel, M.S., *Vice-Chancellor for Medical Center Development and Alumni Affairs*  
William J. Donelan, B.A., M.S., *Vice-Chancellor and Chief Financial Officer for Medical Center Administration*  
Gordon G. Hammes, Ph.D., *Vice-Chancellor for Medical Center Academic Affairs*  
Mark C. Rogers, M.D., *Vice-Chancellor for Health Services and Executive Director of Duke University Hospital*  
David B. Adcock, J.D., *University Counsel*  
N. Allison Haltom, A.B., *Secretary of the University*  
William H. Willimon, M.Div., S.T.D., *Dean of the Chapel*

## GRADUATE SCHOOL ADMINISTRATION

Lewis Siegel, Ph.D., *Dean of the Graduate School*  
A. Leigh DeNeef, Ph.D., *Associate Dean*  
A. Ayanna Boyd-Williams, Ph.D., *Assistant Dean*  
Donna Lee Giles, A.B., *Assistant Dean*  
Katharine Pfeiffer, M.A., *Assistant Dean*

## EXECUTIVE COMMITTEE OF THE GRADUATE FACULTY

Lewis Siegel, *Dean*  
Leigh DeNeef, *Associate Dean*  
Roger Barr (Biomedical Engineering)  
David Bell (Romance Studies)  
John Boynton (Botany)  
Elizabeth Clark (Religion)  
Philip Cook (Public Policy Studies)  
Jeffrey Dawson (Immunology)  
Owen Flanagan (Philosophy)  
Gary Gereffi (Sociology)  
Ruth Grant (Political Science)  
Peter Holland (Psychology)  
Kenneth Kreuzer (Microbiology)  
Michael Moses (English)  
Jeffrey Peirce (Civil and Environmental Engineering)  
Michael Reed (Mathematics)  
Robert Webster (Computer Science)  
Henry Weller (Physics)

## Graduate School Faculty

(As of January 1, 1996.)

The date denotes the first year of service at Duke University.

Stanley Kenji Abe (1994), Ph.D., *Assistant Professor of Art and Art History*  
Mohamed Bahie Abou-Donia (1975), Ph.D., *Professor of Pharmacology and Professor of Neurobiology*  
Dolph O. Adams (1972), M.D., Ph.D., *Professor of Pathology and Associate Professor of Immunology*  
Pankaj K. Agarwal (1990), Ph.D., *Associate Professor of Computer Science*  
Peter Aitken (1988), Ph.D., *Associate Medical Professor of Cell Biology*  
John H. Aldrich (1987), Ph.D., *Professor of Political Science*  
Dimitri Alexandrou (1987), Ph.D., *Associate Professor of Electrical Engineering*  
William K. Allard (1975), Ph.D., *Professor of Mathematics*  
Anne Allison (1992), Ph.D., *Assistant Professor of Cultural Anthropology*  
A. Tito Alt (1961-65; 1967), Ph.D., *Professor of Germanic Languages and Literature*  
Nels C. Anderson (1966), Ph.D., *Associate Professor of Cell Biology*  
Norman B. Anderson (1985), Ph.D., *Associate Professor of Psychology: Social and Health Sciences*



Page A. W. Anderson (1973), M.D., Assistant Professor of Cell Biology  
 Edna Andrews (1984), Ph.D., Associate Professor of Slavic Languages and Literatures  
 James J. Anton (1989), Ph.D. Associate Professor of Business Administration  
 Janis Antonovics (1970), Ph.D., James J. Wolfe Professor of Botany  
 James W. Applewhite (1971), Ph.D., Professor of English  
 Mahadev L. Apte (1965), Ph.D., Professor of Cultural Anthropology  
 Ronald Paul Archer (1990), Ph.D., Assistant Professor of Political Science  
 Gustavo Arcia (1994), Adjunct Associate Professor of Public Policy Studies  
 William Louis Ascher (1984), Ph.D., Professor of Public Policy Studies and Professor of Political Science  
 Alison Hubbard Ashton (1986), Ph.D., Associate Professor of Business Administration  
 Robert H. Ashton (1986), Ph.D. T. Austin Finch, Sr., Professor of Business Administration  
 George J. Augustine (1991), Ph.D., Associate Professor of Neurobiology  
 Lloyd R. Bailey, Lee Baker (1995), Ph.D., Assistant Professor of Cultural Anthropology  
 Paul A. Baker (1981), Ph.D., Professor of Geology  
 Andrew E. Balber (1985), Ph.D., Associate Medical Research Professor of Immunology  
 Steven W. Baldwin (1978), Ph.D., Professor of Chemistry  
 Helmy Hamdollah Baligh (1967), Ph.D., Professor of Business Administration  
 Robert H. Ballantyne (1962), Ed.D., Associate Professor of Education  
 Ravi Bansal (1990), Ph.D., Associate Professor of Business Administration and Adjunct Assistant Professor of Economics  
 Richard T. Barber (1980), Ph.D., Harvey W. Smith Professor of Biological Oceanography  
 Roger C. Barr (1969), Ph.D., Professor of Biomedical Engineering  
 Elizabeth C. Bartlet (1982), Ph.D., Associate Professor of Music  
 Robert Charles Bartlett (1976), M.A., Professor of Physical Therapy  
 Jorge Valls Bartolome (1978), Ph.D., Associate Medical Research Professor of Pharmacology  
 Deepak Bastia (1979), Ph.D., Professor of Microbiology  
 J. Thomas Beale (1983), Ph.D., Professor of Mathematics  
 Hie Ping Beall (1975), Ph.D., Assistant Research Professor of Mechanical Engineering and Materials Science  
 Michael Been (1987), Ph.D., Associate Professor of Biochemistry  
 Lorena Beese (1992), Ph.D., Assistant Professor of Biochemistry  
 Robert D. Behn (1973), Ph.D., Professor of Public Policy Studies  
 Robert Paul Behringer (1982), Ph.D., James B. Duke Professor of Physics, Professor of Computer Science, and Professor of Mechanical Engineering and Materials Science  
 Adrian Bejan (1984), Ph.D., J. A. Jones Professor of Mechanical Engineering and Materials Science  
 David F. Bell III (1983), Ph.D., Professor of Romance Studies  
 Maura A. Belliveau (1995), Ph.D., Assistant Professor of Business Administration  
 Messod Beneish (1989), Ph.D., Associate Professor of Business Administration  
 Bruce A. Benjamin (1989), Ph.D., Assistant Professor of Cell Biology  
 Peter Brian Bennett (1972), Ph.D., D.Sc., Professor of Cell Biology  
 Vann Bennett (1987), Ph.D., Professor of Biochemistry and Professor of Cell Biology  
 Teresa Berger (1987), Ph.D., Assistant Professor of Religion, Ecumenical Theology  
 Donald A. Berry (1990), Ph.D., Professor of Statistics and Decision Sciences  
 James R. Bettman (1982), Ph.D., Burlington Industries Professor of Business Administration, Professor of Psychology: Experimental, and Professor of Psychology: Social and Health Sciences  
 Tami Davis Biddle (1995), Ph.D., Assistant Professor of History  
 Alan Biermann (1974), Ph.D., Professor of Computer Science  
 Darell D. Bigner (1972), M.D., Ph.D., Professor of Pathology  
 Sandra H. Bigner (1977), M.D., Professor of Pathology  
 Edward George Bilpuch (1962), Ph.D., Professor of Physics  
 Perry J. Blackshear (1984), M.D., Ph.D., Professor of Biochemistry  
 Kalman P. Bland (1973), Ph.D., Associate Professor of Religion  
 Donald B. Bliss (1985), Ph.D., Associate Professor of Mechanical Engineering and Materials Science  
 Jacob J. Blum (1962), Ph.D., James B. Duke Professor of Cell Biology  
 James A. Blumenthal (1979), Ph.D., Professor of Psychology: Social and Health Sciences  
 Fred K. Boadu (1994), Ph.D., Assistant Professor of Civil Engineering  
 John A. Board, Jr. (1986), Ph.D., Associate Professor of Electrical Engineering and Assistant Professor of Computer Science  
 Mary T. Boatwright (1979), Ph.D., Professor of Classical Studies  
 Dani F. Bolognesi (1971), Ph.D., Professor of Microbiology  
 Celia Bonaventura (1972), Ph.D., Professor of Environment and Professor of Cell Biology  
 Joseph Bonaventura (1972), Ph.D., Professor of Environment and Professor of Cell Biology  
 James F. Bonk (1959), Ph.D., Professor of Chemistry  
 Frank Borchardt (1971), Ph.D., Professor of Germanic Languages and Literature  
 Edward H. Bossen (1972), M.D., Professor of Pathology  
 Laura J. Bottomley (1992), Ph.D., Research Assistant Professor of Electrical Engineering  
 Alan E. Boudreau (1988), Ph.D. Associate Professor of Geology  
 Rose-Mary Boustany (1994), Ph.D., Assistant Professor of Neurobiology  
 William F. Boulding (1984), Ph.D., Associate Professor of Business Administration  
 Stephen G. Boyce (1981), Ph.D., Adjunct Professor of Environmental Studies  
 John E. Boynton (1968), Ph.D., Professor of Botany

William D. Bradford (1966), M.D., *Professor of Pathology*  
 Michael Bradley (1995), Ph.D., *F. M. Kirby Professor of Business Administration*  
 Robert N. Brandon (1979), Ph.D., *Professor of Philosophy and Professor of Zoology*  
 Douglas T. Breeden (1985), Ph.D., *Research Professor of Business Administration*  
 John J. Brehm (1990), Ph.D., *Assistant Professor of Political Science*  
 Susan E. Brodt (1994), Ph.D., *Assistant Professor of Business Administration*  
 Arnold Ralph Brody (1978), Ph.D., *Adjunct Assistant Professor of Pathology*  
 Thomas Brothers (1991), Ph.D., *Assistant Professor of Music*  
 Anthony Brown (1994), Ph.D., *Professor of the Practice of Public Policy Studies*  
 Caroline A. Bruzelius (1981), Ph.D., *Professor of Art History*  
 Robert Bryant (1987), Ph.D., *Juanita M. Kreps Professor of Mathematics*  
 James D. Bryers (1984), Ph.D., *Adjunct Associate Professor of Civil Engineering*  
 C. Edward Buckley, III (1963), M.D., *Assistant Professor of Immunology*  
 Rebecca Buckley (1971), M.D., *Professor of Immunology*  
 M. Vickers Burdett (1977), Ph.D., *Associate Research Professor of Microbiology*  
 Donald S. Burdick (1962), Ph.D., *Associate Professor of Statistics and Decision Sciences, Associate Professor of Biomedical Engineering, and Associate Professor of Mathematics*  
 Peter C. Burger (1973), M.D., *Professor of Pathology*  
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 Jean-Jacques Thomas (1981), Doctorat de 3e Cycle, *Professor of Romance Studies and Professor of Literature*  
 John E. Thomas (1987), Ph.D., *Professor of Physics*  
 John H. Thompson (1991), Ph.D., *Professor of History*  
 Peter A. Thompson (1992), Ph.D., *Assistant Professor of Mechanical Engineering and Materials Science and Assistant Professor of Physics*  
 Robert J. Thompson, Jr. (1984), Ph.D., *Adjunct Professor of Psychology*  
 Jennifer Thorn (1993), Ph.D., *Assistant Professor of English*  
 Susan Thorne (1991), Ph.D., *Assistant Professor of History*  
 Patricia H. Thornton (1993), Ph.D., *Assistant Professor of Sociology*  
 Fredrick L. Thurstone (1967), Ph.D., *Research Professor of Biomedical Engineering*  
 Edward A. Tiryakian (1965), Ph.D., *Professor of Sociology*  
 Margaret A. Titus (1990), Ph.D., *Assistant Professor of Cell Biology*  
 R. Larry Todd (1978), Ph.D., *Professor of Music*  
 Jane Tompkins (1985), Ph.D., *Professor of English*  
 Eric J. Toone (1991), Ph.D., *Associate Professor of Chemistry and Assistant Professor of Biochemistry*  
 Marianna Torgovnick (1981), Ph.D., *Professor of English*  
 Werner Tornow (1988), Ph.D., *Research Professor of Physics*  
 Edward Tower (1974), Ph.D., *Professor of Economics*  
 Gregg E. Trahey (1985), Ph.D., *Associate Professor of Biomedical Engineering*  
 John A. Trangenstein (1991), Ph.D., *Professor of Mathematics*  
 Vladimir G. Treml (1967), Ph.D., *Professor of Economics*  
 Kishor S. Trivedi (1975), Ph.D., *Professor of Electrical Engineering and Professor of Computer Science*  
 William Tronzo (1992), Ph.D., *Associate Professor of Art History*  
 George Truskey (1987), Ph.D., *Associate Professor of Biomedical Engineering*  
 Vance Tucker (1964), Ph.D., *Professor of Zoology*  
 Clare Tufts (1987), Ph.D., *Associate Professor of the Practice of Romance Studies*  
 Jerry J. Tulis (1993), Ph.D., *Adjunct Associate Professor of the Environment*  
 William Turner (1987), Ph.D., *Assistant Professor of Religion, Theology and Black Church Studies*  
 E. Lee Tyrey (1970), Ph.D., *Professor of Neurobiology*  
 Dean Urban (1994), Ph.D., *Assistant Professor of Environmental Studies*  
 Bisulay Utku (1987), Ph.D., *Adjunct Associate Professor of Civil Engineering*  
 Senol Utku (1970), Sc.D., *Professor of Civil Engineering and Professor of Computer Science*  
 Marcy K. Uyenoyama (1982), Ph.D., *Professor of Zoology*  
 Jeffrey Vance (1988), Ph.D., *Associate Professor of Genetics*  
 Antonius M. Van Dongen (1992), Ph.D., *Assistant Professor of Pharmacology*  
 Hans J. Van Miegroet (1988), Ph.D., *Associate Professor of Art History*  
 Carel van Schaik (1989), Ph.D., *Associate Professor of Biological Anthropology and Anatomy, Associate Professor of Environment, and Associate Professor of Zoology*  
 Stephanos Venakides (1986), Ph.D., *Professor of Mathematics*  
 John M. Vernon (1966), Ph.D., *Professor of Economics*  
 P. Aarne Vesilind (1970), Ph.D., *Professor of Civil Engineering and Professor of the Environment*  
 Nikolaos Vettas (1994), Ph.D., *Assistant Professor of Business Administration*  
 Brani Vidakovic (1994), Ph.D., *Assistant Professor of Statistics and Decision Sciences*  
 Steven Vigna (1987), Ph.D., *Associate Professor of Cell Biology*  
 Teresa Maria Vilaros (1992), Ph.D., *Assistant Professor of Romance Studies*  
 Rytas J. Vilgalys (1986), Ph.D., *Associate Professor of Botany*  
 Elia E. Villanueva (1969), A.M., *Associate Professor of Physical Therapy*  
 Lawrence N. Virgin (1989), Ph.D., *Associate Professor of Mechanical Engineering and Materials Science and Assistant Professor of Civil Engineering*  
 S. Viswanathan (1986), Ph.D., *Associate Professor of Business Administration*  
 Jeffrey Vitter (1993), Ph.D., *Gilbert, Louis, and Edward Lehrman Professor of Computer Science*

Steven Vogel (1966), Ph.D., *Professor of Zoology*  
 Robin T. Vollmer (1975), M.D., *Assistant Clinical Professor of Pathology*  
 Olaf T. von Ramm (1974), Ph.D., *Professor of Biomedical Engineering*  
 Grant A. Wacker (1992), Ph.D., *Associate Professor of Religion*  
 Robert A. Wagner (1978), Ph.D., *Associate Professor of Computer Science*  
 Geoffrey Wainwright (1983), Dr.Theol., *Professor of Religion, Systematic Theology*  
 T. Dudley Wallace (1974), Ph.D., *James B. Duke Professor of Economics*  
 Wanda T. Wallace (1990), Ph.D., *Associate Professor of Business Administration*  
 Lise Wallach (1970), Ph.D., *Research Professor of Psychology: Experimental and Research Professor of Psychology: Social and Health Sciences*  
 Michael A. Wallach (1962-72; 1973), Ph.D., *Professor of Psychology: Experimental and Professor of Psychology: Social and Health Sciences*  
 Richard L. Walter (1962), Ph.D., *Professor of Physics*  
 Ingeborg Walther (1994), Ph.D., *Assistant Professor of Germanic Languages and Literature*  
 James J. D. Wang (1995), Ph.D., *Assistant Professor of Business Administration*  
 Paul P. Wang (1968), Ph.D., *Professor of Electrical Engineering*  
 Xiao-Fan Wang (1992), Ph.D., *Assistant Professor of Pharmacology*  
 Calvin L. Ward (1952), Ph.D., *Professor of Zoology*  
 Frances Ellen Ward (1969), Ph.D., *Professor of Immunology*  
 Seth L. Warner (1955), Ph.D., *Professor of Mathematics*  
 Robert E. Webster (1970), Ph.D., *Professor of Biochemistry*  
 E. Roy Weintraub (1970), Ph.D., *Professor of Economics*  
 Morris Weisfeld (1967), Ph.D., *Professor of Mathematics*  
 Henry R. Weller (1978), Ph.D., *Professor of Physics*  
 Karen Wells (1990), Ph.D., *Associate Professor of Psychology: Social and Health Sciences*  
 Richard L. Wells (1962), Ph.D., *Professor of Chemistry*  
 Klaus Wertenbroch (1994), Ph.D., *Assistant Professor of Business Administration*  
 Michael West (1990), Ph.D., *Professor of Statistics and Decision Sciences*  
 Robert E. Whaley (1986), Ph.D., *T. Austin Finch Foundation Professor of Business Administration*  
 Annabel Wharton (1979), Ph.D., *Professor of Art History*  
 Robin P. Wharton (1992), Ph.D., *Assistant Professor of Genetics and Assistant Professor of Microbiology*  
 Frances J. White (1987), Ph.D., *Assistant Professor of Biological Anthropology and Anatomy*  
 Richard A. White (1963), Ph.D., *Professor of Botany*  
 Stephen William White (1990), Ph.D., *Associate Professor of Microbiology*  
 Richard Whorton (1979), Ph.D., *Associate Professor of Pharmacology*  
 Robert L. Wilbur (1957), Ph.D., *Professor of Botany*  
 Christina L. Williams (1994), *Associate Professor of Psychology: Experimental*  
 Kenny J. Williams (1977), Ph.D., *Professor of English*  
 Peter Fredric Williams (1985), Ph.D., *Arts and Sciences Professor of Music*  
 Redford B. Williams (1991), M.D., *Professor of Psychology: Social and Health Sciences*  
 Susan Willis (1989), Ph.D., *Associate Professor of English*  
 James F. Wilson (1967), Ph.D., *Professor of Civil Engineering*  
 John Wilson (1968), D.Phil., *Professor of Sociology*  
 Wilkie Andrew Wilson, Jr. (1974), Ph.D., *Medical Research Professor of Pharmacology*  
 Robert L. Winkler (1984), Ph.D., *James B. Duke Professor of Business Administration and Professor of Statistics and Decision Sciences*  
 Orval S. Wintermute (1958), Ph.D., *Professor of Religion*  
 Ronald G. Witt (1971), Ph.D., *Professor of History*  
 Benjamin Wittels (1961), M.D., *Professor of Pathology*  
 Myron L. Wolbarsht (1968), Ph.D., *Professor of Ophthalmology in the Department of Psychology and Professor of Biomedical Engineering*  
 Patrick Wolf (1993), Ph.D., *Assistant Professor of Biomedical Engineering*  
 Robert L. Wolpert (1984), Ph.D., *Associate Professor of Statistics and Decision Sciences and Associate Professor of the Environment*  
 Fulton Wong (1989), Ph.D., *Associate Professor of Neurobiology*  
 Peter H. Wood (1975), Ph.D., *Professor of History*  
 Donald Wright (1967), Ph.D., *Associate Professor of Mechanical Engineering and Materials Science*  
 Jo Rae Wright (1993), Ph.D., *Associate Professor of Cell Biology*  
 Duncan Yaggy (1980), Ph.D., *Adjunct Professor of Public Policy Studies*  
 Jun Yang (1992), Ph.D., *Assistant Professor of Mathematics*  
 Weitao Yang (1989), Ph.D., *Associate Professor of Chemistry*  
 William E. Yarger (1971), M.D., *Assistant Professor of Cell Biology*  
 Gary Ybarra (1994), Ph.D., *Assistant Research Professor of Electrical Engineering*  
 William P. Yohe (1958), Ph.D., *Professor of Economics*  
 John G. Younger (1974), Ph.D., *Professor of Classical Archaeology in Classical Studies*  
 Michael Rod Zalutsky (1985) Ph.D., *Assistant Professor of Pathology*  
 John W. Zarker (1989), Ph.D., *Senior Lecturing Fellow in Classical Studies*  
 Doncho Zhelev (1993), Ph.D., *Assistant Research Professor of Mechanical Engineering*  
 Fangyang Zheng (1990), Ph.D., *Assistant Professor of Mathematics*  
 Pei Zhong (1994), Ph.D., *Associate Research Professor of Mechanical Engineering*



Xin Zhou (1993), Ph.D., *Associate Professor of Mathematics*  
 Xueguang Zhou (1994), Ph.D., *Assistant Professor of Sociology*  
 Paul H. Zipkin (1995), Ph.D., T. Austin Finch, Sr., *Professor of Business Administration*  
 Peter Zwadyk, Jr. (1971), Ph.D., *Associate Professor of Pathology and Associate Professor of Microbiology*

## Professors Emeriti

Irving E. Alexander (1963), Ph.D., *Professor Emeritus of Psychology*  
 D. Bernard Amos (1962), M.D., *James B. Duke Professor Emeritus of Immunology*  
 Carl L. Anderson (1955), Ph.D., *Professor Emeritus of English*  
 Lewis Edward Anderson (1936), Ph.D., *Professor Emeritus of Botany*  
 Roger Fabian Anderson (1950), Ph.D., *Professor Emeritus of Entomology*  
 Edward M. Arnett (1980), Ph.D., R. J. Reynolds *Professor Emeritus of Chemistry*  
 Kurt W. Back (1959), Ph.D., *James B. Duke Professor Emeritus of Sociology*  
 Joseph Randle Bailey (1946), Ph.D., *Professor Emeritus of Zoology*  
 Frank Baker (1960), Ph.D., *Professor Emeritus of English Church History*  
 M. Margaret Ball (1963), Ph.D., *Professor Emeritus of Political Science*  
 Katharine May Banham (1946), Ph.D., *Associate Professor Emeritus of Psychology*  
 James David Barber (1972), Ph.D., *James B. Duke Professor Emeritus of Political Science and Professor of Public Policy Studies*  
 William Waldo Beach (1946), Ph.D., *Professor Emeritus of Christian Ethics*  
 Mary L. C. Bernheim (1930), Ph.D., *Professor Emeritus of Biochemistry*  
 William Dwight Billings (1952), Ph.D., *James B. Duke Professor Emeritus of Botany*  
 John O. Blackburn (1959), Ph.D., *Professor Emeritus of Economics*  
 Cazlyn Green Bookhout (1935), Ph.D., *Professor Emeritus of Zoology*  
 Lloyd J. Borstelmann (1953), Ph.D., *Professor Emeritus of Psychology*  
 Benjamin Boyce (1950), Ph.D., *James B. Duke Professor Emeritus of English*  
 Charles Kilgo Bradsher (1939), Ph.D., *James B. Duke Professor Emeritus of Chemistry*  
 Ralph Braibanti (1953), Ph.D., *James B. Duke Professor Emeritus of Political Science*  
 Eleanor F. Branch (1953), Ph.D., *Associate Professor Emeritus of Physical Therapy*  
 Martin Bronfenbrenner (1971), Ph.D., William R. Kenan, Jr. *Professor Emeritus of Economics*  
 Earl Ivan Brown II (1960), Ph.D., J. A. Jones *Professor Emeritus of Civil Engineering*  
 Louis J. Budd (1952), Ph.D., *James B. Duke Professor Emeritus of English*  
 Frances Campbell Brown (1931), Ph.D., *Professor Emeritus of Chemistry*  
 Edwin H. Cady (1973), Ph.D., Andrew W. Mellon *Professor Emeritus in the Humanities*  
 Clark R. Cahow (1960), Ph.D., *Arts and Sciences Professor Emeritus of History*  
 Leonard Carlitz (1932), Ph.D., *James B. Duke Professor Emeritus of Mathematics*  
 William H. Cartwright (1951), Ph.D., *Professor Emeritus of Education*  
 Jack B. Chaddock (1966), Sc.D., *Professor Emeritus of Mechanical Engineering and Materials Science*  
 Frederic N. Cleaveland (1971), Ph.D., *Professor Emeritus of Political Science*  
 Kalman J. Cohen (1974), Ph.D., *Distinguished Bank Research Professor Emeritus*  
 Joel Colton (1947), Ph.D., *Professor Emeritus of History*  
 Robert Merle Colver (1953), Ed.D., *Associate Professor Emeritus of Education*  
 Thomas Howard Cordle (1950), Ph.D., *Professor Emeritus of Romance Studies*  
 Sheila J. Counce (1968), Ph.D., *Professor Emeritus of Cell Biology*  
 William Louis Culberson (1955), Ph.D., Hugo L. Blomquist *Professor Emeritus of Botany*  
 Robert E. Cushman (1945), Ph.D., *Research Professor Emeritus of Systematic Theology*  
 Bingham Dai (1943), Ph.D., *Professor Emeritus of Psychology*  
 David G. Davies (1961), Ph.D., *Professor Emeritus of Economics*  
 William D. Davies (1966), D.D., F.B.A., *George Washington Ivey Professor Emeritus of Advanced Studies and Research in Christian Origins*  
 Eugene Davis Day (1962), Ph.D., *Professor Emeritus of Immunology*  
 Irving T. Diamond (1958), Ph.D., *James B. Duke Professor Emeritus of Psychology*  
 Neal Dow (1934), Ph.D., *Professor Emeritus of Romance Languages*  
 Francis George Dressel (1929), Ph.D., *Professor Emeritus of Mathematics*  
 Kenneth Lindsay Duke (1940), Ph.D., *Associate Professor Emeritus of Biological Anthropology and Anatomy*  
 Robert F. Durden (1952), Ph.D., *Professor Emeritus of History*  
 George F. Dutrow (1976), Ph.D., *Professor Emeritus of Forestry and Environmental Studies*  
 Howard Easley (1930), Ph.D., *Associate Professor Emeritus of Education*  
 Ernest Elsevier (1950), M.S., *Associate Professor Emeritus of Mechanical Engineering*  
 Henry A. Fairbank (1962), Ph.D., *Professor Emeritus of Physics*  
 Arthur Bowles Ferguson (1939), Ph.D., *Professor Emeritus of History*  
 Oliver W. Ferguson (1957), Ph.D., *Professor Emeritus of English*  
 Donald J. Fluke (1958), Ph.D., *Professor Emeritus of Zoology*  
 Wallace Fowlie (1964), Ph.D., *James B. Duke Professor Emeritus of Romance Languages*  
 John Hope Franklin (1981), Ph.D., *James B. Duke Professor Emeritus of History*  
 Ernestine Friedl (1973), Ph.D., *James B. Duke Professor Emeritus of Anthropology*  
 William J. Furbish (1954), M.S., *Associate Professor Emeritus of Geology*  
 Thomas M. Gallie, Jr. (1954-55; 1956), Ph.D., *Professor Emeritus of Computer Science*  
 W. Scott Gehman, Jr. (1954), Ph.D., *Professor Emeritus of Psychology in Education*



Clarence Gohdes (1930), Ph.D., *James B. Duke Professor Emeritus of English*  
 John R. Gregg (1957), Ph.D., *Professor Emeritus of Zoology*  
 Samson R. Gross (1960), Ph.D., *Professor Emeritus of Biochemistry*  
 Kazimierz Grzybowski (1967), S.J.D., *Professor Emeritus of Political Science*  
 John W. Gutknecht (1969), Ph.D., *Professor Emeritus of Environment*  
 Herbert Hacker, Jr. (1965), Ph.D., *Associate Professor Emeritus of Electrical Engineering*  
 Hugh Marshall Hall, Jr. (1952), Ph.D., *Professor Emeritus of Political Science*  
 John Hamilton Hallowell (1942), Ph.D., *James B. Duke Professor Emeritus of Political Science*  
 Jerome S. Harris (1936), M.D., *Professor Emeritus of Biochemistry*  
 William S. Hecksher (1966), Ph.D., *Benjamin N. Duke Professor Emeritus of Art*  
 Henry Hellmers (1965), Ph.D., *Professor Emeritus of Botany and Professor Emeritus of Forestry*  
 Stuart C. Henry (1959), Ph.D., *Professor Emeritus of American Christianity*  
 Marcus Edwin Hobbs (1935), Ph.D., *University Distinguished Service Professor Emeritus of Chemistry*  
 Irving B. Holley, Jr. (1947), Ph.D., *Professor Emeritus of History*  
 Everett H. Hopkins (1961), M.A., LL.D., *Professor Emeritus of Education*  
 Alexander Hull (1962), Ph.D., *Associate Professor Emeritus of Romance Studies*  
 Wanda S. Hunter (1947), Ph.D., *Associate Professor Emeritus of Zoology*  
 Allan S. Hurlburt (1956), Ph.D., *Professor Emeritus of Education*  
 B. Jon Jaeger (1972), Ph.D., *Professor Emeritus of Health Administration*  
 Benjamin A. Jayne (1976), Ph.D., *Professor Emeritus of Forestry*  
 Bronislas de Leval Jezierski (1958), Ph.D., *Associate Professor Emeritus of Slavic Languages and Literatures*  
 Frans F. Jöbsis (1964), Ph.D., *Professor Emeritus of Cell Biology*  
 Charles B. Johnson (1956), Ed.D., *Associate Professor Emeritus of Education*  
 Terry W. Johnson, Jr. (1954), Ph.D., *Professor Emeritus of Botany*  
 Alan C. Kerckhoff (1958), Ph.D., *Professor Emeritus of Sociology*  
 Robert B. Kerr (1965), Ph.D., *Professor Emeritus of Electrical Engineering*  
 Gregory A. Kimble (1952-68; 1977), Ph.D., *Professor Emeritus of Psychology*  
 John A. Koepke (1979), M.D., *Professor Emeritus of Pathology*  
 Irwin Kremen (1963), Ph.D., *Assistant Professor Emeritus of Psychology*  
 Juanita Kreps (1957), Ph.D. *James B. Duke Professor Emeritus of Economics*  
 Wladyslaw W. Kulski (1963), Ph.D., LL.D., *James B. Duke Professor Emeritus of Russian Affairs*  
 Weston LaBarre (1946), Ph.D., *James B. Duke Professor Emeritus of Anthropology*  
 Leon Lack (1965), Ph.D., *Professor Emeritus of Pharmacology*  
 Creighton Lacy (1953), Ph.D., *Professor Emeritus of World Christianity*  
 Martin Lakin (1958), Ph.D., *Professor Emeritus of Psychology: Social and Health Sciences*  
 Richard H. Leach (1955), Ph.D., *Professor Emeritus of Political Science*  
 Harold Walter Lewis (1946), Ph.D., *University Distinguished Service Professor Emeritus of Physics*  
 C. Eric Lincoln (1976), Ph.D., *William R. Kenan, Jr. Professor Emeritus of Religion*  
 L. Sigfred Linderoth, Jr. (1965), M.E., *Professor Emeritus of Mechanical Engineering*  
 Kenneth S. McCarty (1959), Ph.D., *Professor Emeritus of Biochemistry*  
 John Nelson Macduff (1956), M.M.E., *Professor Emeritus of Mechanical Engineering*  
 Sidney David Markman (1947), Ph.D., *Professor Emeritus of Art History and Professor Emeritus of Archaeology*  
 Richard S. Metzgar (1962), Ph.D., *Professor Emeritus of Immunology*  
 John W. Moore (1961), Ph.D., *Professor Emeritus of Neurobiology*  
 Montrose J. Moses (1959), Ph.D., *Professor Emeritus of Cell Biology*  
 Earl George Mueller (1945), Ph.D., *Professor Emeritus of Art*  
 Roland E. Murphy (1967-68; 1971), S.T.D., *George Washington Ivey Professor Emeritus of Old Testament*  
 Francis Joseph Murray (1960), Ph.D., *Professor Emeritus of Mathematics*  
 George C. Myers (1968), Ph.D., *Professor Emeritus of Sociology*  
 Aubrey Willard Naylor (1952), Ph.D., *James B. Duke Professor Emeritus of Botany*  
 Thomas H. Naylor (1964), Ph.D., *Professor Emeritus of Economics*  
 Yasuhiko Nozaki (1966), Ph.D., *Associate Professor Emeritus of Biochemistry*  
 Holger O. Nygard (1968), Ph.D., *Professor Emeritus of English*  
 James G. Osborne (1961), B.S., *Professor Emeritus of Forest Biometry*  
 Suydam Osterhout (1959), M.D., Ph.D., *Professor Emeritus of Microbiology and Immunology*  
 Athos Ottolenghi (1959), M.D., *Professor Emeritus of Pharmacology*  
 Harry Ashton Owen, Jr. (1951), Ph.D., *Professor Emeritus of Electrical Engineering*  
 Erdman B. Palmore (1967), Ph.D., *Professor Emeritus of Sociology*  
 Harold Talbot Parker (1939), Ph.D., *Professor Emeritus of History*  
 William Bernard Peach (1951), Ph.D., *Professor Emeritus of Philosophy*  
 Olan Lee Petty (1952), Ph.D., *Professor Emeritus of Education*  
 Leland R. Phelps (1961), Ph.D., *Professor Emeritus of Germanic Languages and Literature*  
 Jane Philpott (1951), Ph.D., *Professor Emeritus of Botany and Professor Emeritus of Wood Anatomy*  
 Jacques C. Poirier (1955), Ph.D., *Professor Emeritus of Chemistry*  
 William H. Poteat (1960), Ph.D., *Professor Emeritus of Religion*  
 Philip Pratt (1966), M.D., *Professor Emeritus of Pathology*  
 Jack J. Preiss (1959), Ph.D., *Professor Emeritus of Sociology*  
 Richard A. Preston (1965), Ph.D., *William K. Boyd Professor Emeritus of History*  
 Louis DuBose Quin (1957), Ph.D., *James B. Duke Professor Emeritus of Chemistry*

Jacqueline A. Reynolds (1969), Ph.D., *Professor Emeritus of Cell Biology*  
 Lawrence Richardson, Jr. (1966), Ph.D., *James B. Duke Professor Emeritus of Classical Studies*  
 Hugh G. Robinson (1964), Ph.D., *Professor Emeritus of Physics*  
 Theodore Ropp (1938), Ph.D., *Professor Emeritus of History*  
 Mabel F. Rudisill (1948), Ph.D., *Associate Professor Emeritus of Education*  
 Charles Richard Sanders (1937), Ph.D., *Professor Emeritus of English*  
 Lloyd Saville (1946), Ph.D., *Professor Emeritus of Economics*  
 Harold Schiffman (1963), Ph.D., *Professor Emeritus of Psychology*  
 Knut Schmidt-Nielsen (1952), D.Ph., *James B. Duke Professor Emeritus of Physiology and Zoology*  
 Anne Firor Scott (1961), Ph.D., *William K. Boyd Professor Emeritus of History*  
 William E. Scott (1958), Ph.D., *Professor Emeritus of History*  
 Joseph R. Shoenfield (1952), Ph.D., *Professor Emeritus of Mathematics*  
 William H. Simpson (1930), Ph.D., *Professor Emeritus of Political Science*  
 Donald S. Smith II (1961), M.H.A., *Assistant Professor Emeritus of Health Administration*  
 Grover C. Smith (1952), Ph.D., *Professor Emeritus of English*  
 Joachim R. Sommer (1957), M.D., *Professor Emeritus of Pathology*  
 William J. Stambaugh (1961), Ph.D., *Professor Emeritus of Environmental Studies*  
 William Franklin Stinespring (1936), Ph.D., *Professor Emeritus of Old Testament and Semitics*  
 Howard Austin Strobel (1948), Ph.D., *Professor Emeritus of Chemistry*  
 Charles Tanford (1960), Ph.D., *James B. Duke Professor Emeritus of Physiology*  
 Richard L. Tuthill (1953), Ed.D., *Professor Emeritus of Economic Geography*  
 Patrick R. Vincent (1954), Ph.D., *Associate Professor Emeritus of Romance Languages*  
 F. Stephen Vogel (1961), M.D., *Professor Emeritus of Pathology*  
 Stephen A. Wainwright (1964), Ph.D., *James B. Duke Professor Emeritus of Zoology*  
 William D. Walker (1971), Ph.D., *Professor Emeritus of Physics*  
 Bruce W. Wardropper (1962), Ph.D., *William Haynes Wannamaker Professor Emeritus of Romance Studies*  
 Richard Lyness Watson, Jr. (1939), Ph.D., *Professor Emeritus of History*  
 Henry Weitz (1950), Ed.D., *Professor Emeritus of Education*  
 Paul Welsh (1948), Ph.D., *Professor Emeritus of Philosophy*  
 Robert W. Wheat (1958), Ph.D., *Professor Emeritus of Microbiology*  
 Pelham Wilder, Jr. (1949), Ph.D., *University Distinguished Professor Emeritus of Chemistry*  
 Hilda Pope Willett (1948), Ph.D., *Professor Emeritus of Microbiology*  
 George W. Williams (1957), Ph.D., *Professor Emeritus of English*  
 William Hailey Willis (1963), Ph.D., *Professor Emeritus of Greek in Classical Studies*  
 Thomas George Wilson (1959), Sc.D., *Professor Emeritus of Electrical Engineering*  
 Cliff W. Wing, Jr. (1965), Ph.D., *Professor Emeritus of Psychology*  
 Max A. Woodbury (1966), Ph.D., *Professor Emeritus of Computer Science*  
 James G. Yoho (1984), Ph.D., *Professor Emeritus of Forestry*  
 Charles R. Young (1954), Ph.D., *Professor Emeritus of History*  
 Franklin W. Young (1944-50; 1968), Ph.D., *Amos Ragan Kearns Professor Emeritus of New Testament and Patristic Studies*

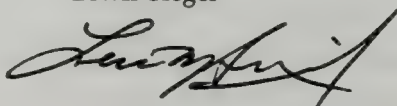
## TO THE PROSPECTIVE GRADUATE STUDENT

A graduate school is where excellence in scholarship is established in a university. At Duke, the Graduate School is where the two essential functions of a university, teaching and research, truly come together. Over the years Duke's strength at the graduate level has grown in all the main fields of knowledge. The 1980s were particularly fruitful years for recruitment of faculty, establishment of new programs, and attraction of outstanding students. The international distinction of the faculty continues to grow in the 1990s. The laboratories, libraries, and computer facilities, already among the very best, are targets of major enhancements in the next decade. Yet the Graduate School remains small enough so that personal contact is a central feature of our programs, and fruitful interaction across disciplines is a common experience, both for faculty and students.

For the student in search of a strong graduate education, Duke University has much to offer. This is a community in which minds and ideas grow. We provide training for many careers, but we seek also to foster personal creativity and to provide stimulating yet congenial surroundings for productive education and research.

The following pages provide the information you require in making the important choice of the course of your graduate education. We look forward to welcoming you to the Duke community of scholars.

Lewis Siegel

A handwritten signature in dark ink, appearing to read 'Lewis Siegel', with a stylized, flowing script.

*Dean of the Graduate School*





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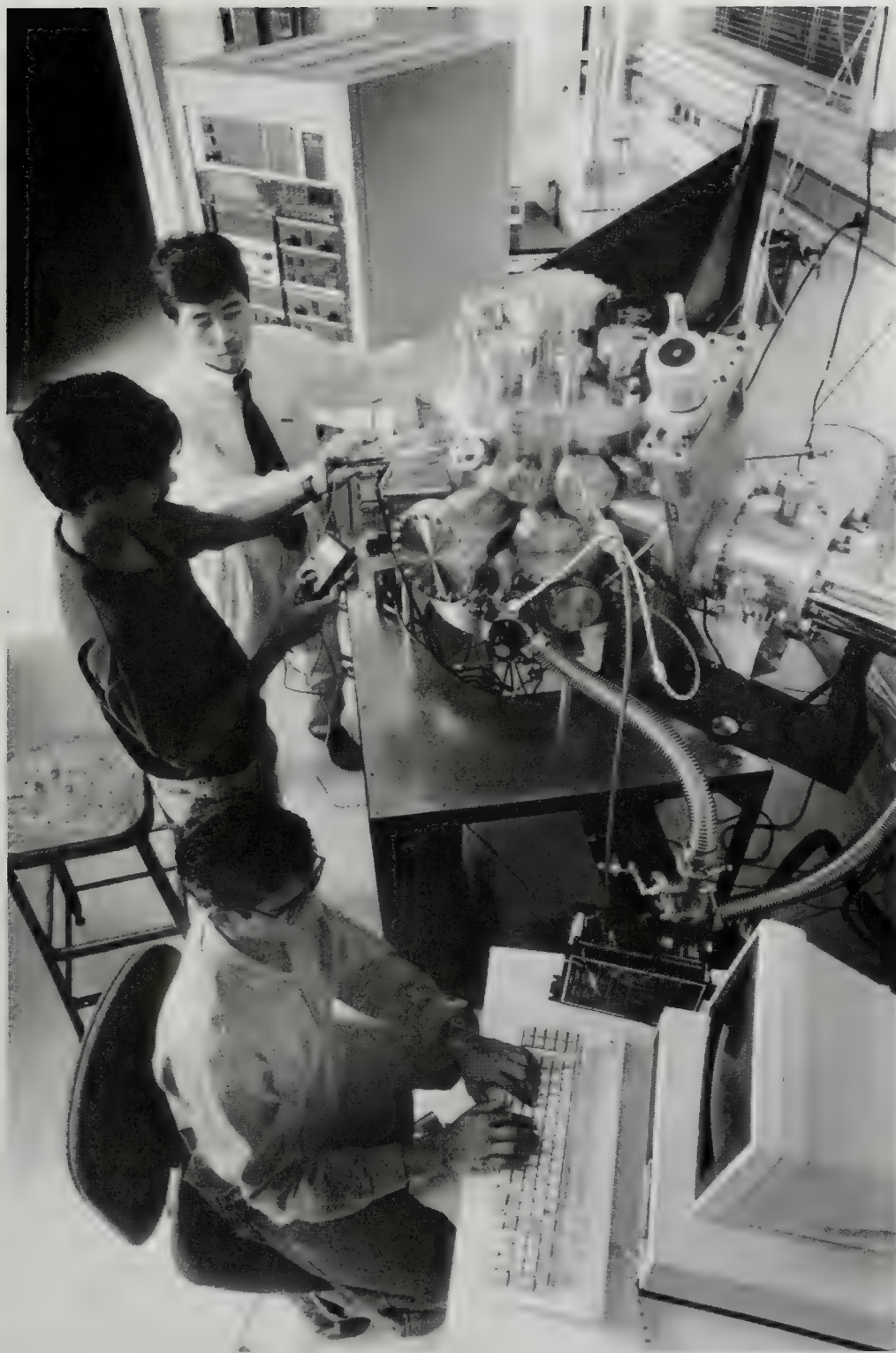
## *Academic and Cooperative Programs*



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| Mathematics                         | Ph.D.                  | 184         |
| Medical History                     | —                      | 188         |
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| Medieval and Renaissance Studies    | certificate            | 189         |
| Microbiology                        | Ph.D.                  | 191         |
| Molecular Biophysics                | certificate            | 193         |
| Molecular Cancer Biology            | Ph.D.                  | 194         |
| Music                               | A.M., Ph.D.            | 195         |
| Neurobiology                        | Ph.D.                  | 198         |
| Pathology                           | Ph.D.                  | 199         |
| Pharmacology                        | Ph.D.                  | 201         |
| Philosophy                          | Ph.D.                  | 203         |
| Physical Therapy                    | M.S.                   | 206         |
| Physics                             | Ph.D.                  | 208         |
| Political Economy                   | certificate            | 212         |



| <b>Department or Program</b>                | <b>Degrees Offered</b> | <b>Page</b> |
|---|------------------------|-------------|
| Political Science                           | A.M., Ph.D.            | 212         |
| Psychology                                  | Ph.D.                  | 219         |
| Public Policy Studies                       | M.P.P.                 | 225         |
| Religion                                    | Ph.D.                  | 230         |
| Romance Studies                             | Ph.D.                  | 239         |
| Slavic, Eurasian, and East European Studies | certificate            | 245         |
| Slavic Languages and Literatures            | A.M., Ph.D.            | 245         |
| Sociology                                   | A.M., Ph.D.            | 251         |
| Statistics and Decision Sciences            | M.S., Ph.D.            | 255         |
| Teaching                                    | M.A.T.                 | 259         |
| Toxicology                                  | certificate            | 260         |
| Women's Studies                             | certificate            | 261         |
| Zoology                                     | Ph.D.                  | 262         |



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*Admission*





## Degree and Nondegree Admission

Students who wish to undertake graduate work at Duke University, whether for degree or nondegree purposes, must be formally admitted to the Graduate School by the dean. Prerequisites for admission include a bachelor's degree (or the equivalent) from an accredited institution and, for degree programs, satisfactory scores on the Graduate Record Examination. Individual departments may specify additional prerequisites, which can be found in the chapter on "Courses of Instruction."

Students who do not intend to earn an advanced degree at Duke, but who wish to take graduate courses, may apply for nondegree admission. Such admission is granted in three different categories: (1) admission as a regular nondegree student with a particular department; (2) admission as a special nondegree student without departmental affiliation through the Office of Continuing Education; and (3) admission as an unclassified student in the summer session only.

Credits earned by nondegree students in graduate courses taken at Duke before full admission to the Graduate School may be carried over into a graduate degree program if (1) the action is recommended by the student's director of graduate studies and approved by the dean, (2) the work is not more than two years old, (3) the amount of such credit does not exceed one semester at full-time tuition, and (4) the work has received grades of C or better.

Students who have discontinued a program of degree work at Duke must apply for readmission to the Graduate School. Those who discontinue study *prior* to completing a degree must, by letter, request permission of the dean to be readmitted to the degree program; those who discontinue study *after* earning a master's degree must file a new application for the doctoral program.

## Admission Procedures\*

A student seeking admission to the Graduate School should obtain application information from the Graduate School Admissions Office, including the necessary forms and detailed instructions on how to apply. All parts of the application forms must be filled out completely, signed, and returned to the Graduate School Admissions Office accompanied by the necessary supporting documents and a nonrefundable application fee. This fee is \$65\*\* in U.S. currency (check or money order payable to Duke University through a U.S. bank). However, if the application is postmarked *and* completed by December 1, the fee is reduced to \$50. The required supporting documents are: (1) one copy of an official, *confidential* transcript from each institution (undergraduate or graduate) attended, sealed in a *confidential* envelope and signed-across-the-seal by the registrar at the institution; (2) three letters of evaluation, written on the forms provided and returned by the applicant in the confidential envelopes that have been sealed-then-signed by the evaluators; (3) official scores on the Graduate Record Examination General Test for applicants to all departments; and (4) official scores on the Graduate Record Examination Subject Test for applicants to certain specified departments. Please consult the current application bulletin for more detailed information on all requirements.

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\*This chapter is a brief summary of, and brief supplement to, information contained in the current Graduate School application bulletin, available both in print, and electronically via the World-Wide Web at <http://www.duke.edu/GSAS/viewbook.html>. Either of these publications should be consulted for more comprehensive information on all aspects of the process of applying for admission and award.

\*\*All fees are based on current charges and are subject to change without notice.

***Materials submitted in support of an application are not released for other purposes and cannot be returned to the applicant.***

Students applying for fall admission and award should take the Graduate Record Examination no later than the October testing in the previous year in order to meet our deadlines. Information on the times and places of the Graduate Record Examinations can be obtained from the applicant's college or the Educational Testing Service, P.O. Box 6000, Princeton, New Jersey 08541-6000.

**Additional Procedures for Foreign Students.** Fully qualified students from outside the United States are invited to apply for admission to full-time study in the Graduate School. The foreign student must, in addition to the information required of all students, submit with the application materials: (1) if the student's native language is not English, certification of English proficiency demonstrated by official scores from the Test of English as a Foreign Language (TOEFL), administered through the Educational Testing Service, P.O. Box 6155, Princeton, New Jersey, 08541-6155 (the Graduate School requires a minimum score of 550); and (2) a statement showing financial arrangements for the proposed term at Duke (estimated costs per calendar year are about \$34,000-\$35,000).\*

**English Language Requirements for Foreign Students.** All international students whose native language is not English must enroll in two sections of English 200 during their initial year at Duke, unless formally waived from this requirement by the Graduate School upon certification of competency in English.

**Part-Time Graduate Study.** Many graduate departments will consider applications from students wishing to pursue degree study on a full-time or part-time basis. (Consult application materials for listing of departments.) Admission requirements, procedures, and deadlines are the same in either case. ***Visa restrictions do not allow nonimmigrant students to pursue graduate study on a part-time basis.***

**Master of Arts in Liberal Studies Procedures.** Students seeking admission to MALS should contact that program directly for information, requirements, and special application materials.

**Summer Session Procedures.** Students who wish to begin graduate work during the summer must check first with the department of interest concerning available courses or research work, as well as funding possibilities; some departments have summer offerings and others do not. Applications should be submitted according to the fall deadline schedule, since summer files will be reviewed along with others who plan to begin in late August.

In addition to the application for regular admission to the Graduate School, students must also apply directly to the summer session. Application forms and catalogues may be obtained from Summer Session, Duke University, Box 90059, Durham, North Carolina 27708-0059, telephone (919) 684-2621.

Students who wish to take graduate courses in the summer but not pursue a graduate degree may be admitted to the summer session under the following categories. *Duke Students:* current students in good standing may attend the summer session without formal application. *Non-Duke Students:* other persons may seek admission to the summer session provided they are (or were) in good standing at a fully accredited college or university.

**Continuing Education Procedures.** A student seeking admission as a nondegree continuing education graduate student at Duke must have received a bachelor's degree and must either reside in the area or be moving to the area with the intention of residing here for a substantial period of time. Application materials and additional information

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\*Figures are based on 1996-97 charges and are subject to change without notice.



may be obtained from the Office of Continuing Education, Duke University, Box 90700, Durham, North Carolina 27708-0700, telephone (919) 684-6259.

**Review of Application and Notification of Status.** All applications are considered without regard to race, color, religion, national origin, handicap, veteran status, sexual orientation or preference, sex, or age.

Application files are assembled in the Graduate School Admissions Office, where all official record-keeping is maintained. Applications, once processed, are sent to the departments. A departmental admissions committee, usually headed by the director of graduate studies, reviews the applications and makes recommendations to the dean. Formal admission to the Graduate School is offered only by the dean, who will send the official letter of admission and an acceptance form. The process of admission is not complete until the student returns the acceptance form.

*Admission may not be deferred from one term to another; an admission offer is only for the semester specified in the letter of admission.*

**Immunizations.** North Carolina Statute G.S.: 130A-155.1 states that no person shall attend a college or university, public, private, or religious, excluding students attending night classes only and students matriculating in off-campus courses, unless a certificate of immunizations against diphtheria, tetanus, whooping cough, poliomyelitis, red measles (rubeola), and rubella is presented to the college or university on or before the first day of matriculation. The required forms and instructions are provided to students in the packet of materials sent with the letter of admission.

## Deadlines for Application

It is the applicant's responsibility to make certain that the Graduate School Admissions Office has received all required materials by the appropriate deadlines. Only complete applications can be considered. To ensure that the admissions office will have adequate time to assemble all items submitted on an applicant's behalf, applications should be sent *at least* two weeks before the stated deadlines.

*Consult current application materials for a more detailed explanation of deadlines and their enforcement.*

### FOR FALL SEMESTER

**December 1.** Deadline for postmark *and completion* of applications eligible to pay the reduced application fee of \$50. All applications postmarked after this date must be accompanied by a fee of \$65 or they will not be processed.

**December 31.** Final deadline for postmark of applications for admission and award to all programs for the fall semester. (Note: Applications must arrive in the Graduate School within fourteen days of the December 31 postmark date.)

Applications postmarked *and* completed by this date are guaranteed a review; those postmarked/completed after this date are not guaranteed consideration. Late applications may be considered for admission only if all spaces have not been filled, and for financial aid, only if funds are still available. All students seeking fall admission should meet the December 31 deadline, since it is likely that enrollment in many departments will be filled soon after this date.

The final cut-off date for processing new applications is July 15. Few departments, however, continue to review applications this late. No applications for fall received after this date will be processed.

### FOR SPRING SEMESTER

**November 1.** Final date for completion of applications for admission to the spring semester, space permitting. Not all departments accept new students for the spring semester, nor is financial aid readily available for spring matriculants.

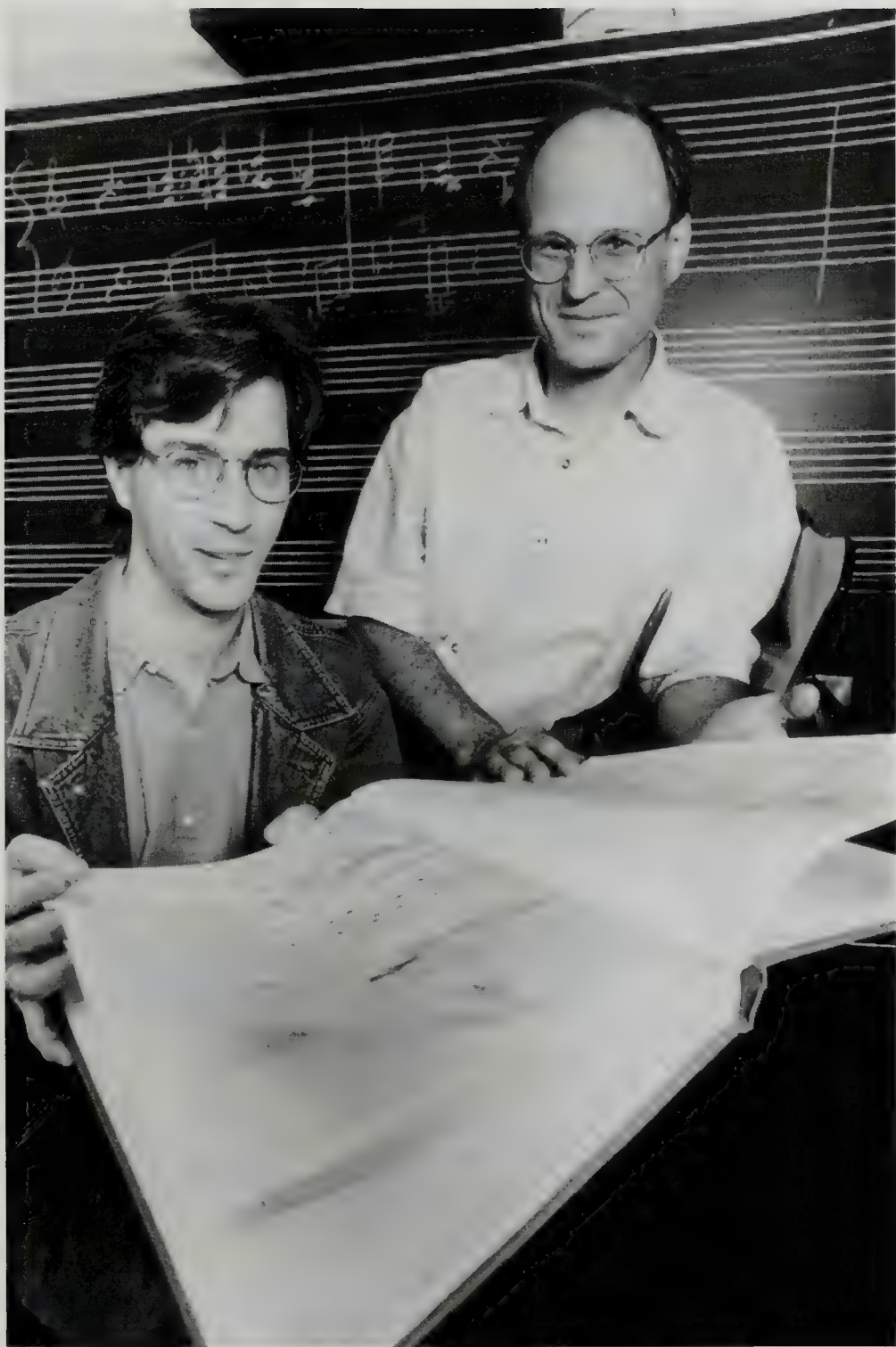


## **FOR SUMMER SESSION**

Students seeking admission to the Graduate School for study in the summer session should apply for Graduate School admission according to the fall deadline schedule and for summer session admission according to the following schedule:

**April 15.** Last day for completing summer session application to Term I.

**May 15.** Last day for completing summer session application to Term II.



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## *Financial Information*





## Fellowships and Scholarships

The Duke University Graduate School and its graduate programs offer a wide array of financial support. Funding is available from annually allocated awards funds, instruction, endowed fellowships, foundation and other private support, as well as federal research and training grants. A student who wishes to be considered for any of the fellowships or assistantships mentioned in this section should so indicate on the application form for admission and award. Selection of award recipients is made on the basis of academic merit and departmental recommendations.\*

(While personal financial need may not be the basis for the granting of many graduate awards, the Graduate School requests that all matriculating students complete the Free Application for Federal Student Aid. This application will be mailed to you upon acceptance.)

In addition to those awards available through the university, applicants are urged to compete for national and foundation awards available for graduate study. The following list provides a few of the awards available, from these sources, and from within the university.

### NATIONAL, REGIONAL, AND FOUNDATION AWARDS

***National Science Foundation Graduate Fellowships and Minority Fellowships:*** predoctoral fellowships for students in the physical, biological, and social sciences. Applications are available from the National Science Foundation, 4201 Wilson Blvd., Arlington, Virginia 22230.

***Howard Hughes Fellowships:*** predoctoral fellowships in biological sciences. Applications are available from the Hughes Fellowship Program, The Fellowship Office, National Research Council, 2101 Constitution Avenue, Washington, D.C., 20148. (202) 334-2872.

***Andrew W. Mellon Fellowship:*** predoctoral fellowship for students who aspire to teaching and scholarship in the humanities. For information write to Fellowships in Humanistic Studies, The Woodrow Wilson National Fellowship Foundation, P.O. Box 288 (300 Alexander Street), Princeton, N.J. 08542-0288. (609) 452-7007.

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\*Students receiving financial support (other than loans) must be registered full time and must maintain satisfactory progress in their degree program.

**Ford Foundation Predoctoral Fellowship for Minorities:** c/o Fellowship Office National Research Council, 2101 Constitution Avenue, Washington, D.C., 20418. (202) 334-2872.

**Frederick K. Weyerhaeuser Forest History Fellowship.** This fellowship is available campus-wide to students who wish to study broadly in the area of forest and conservation history. Inquiries should be made to the Forest History Society, 701 Vickers Avenue, Durham, North Carolina 27701.

## COMPETITIVE GRADUATE SCHOOL FELLOWSHIPS

These competitive fellowships are offered through the Graduate School. Normally, students will not make direct application to these awards, but are nominated by their department.

### Fellowships for Incoming Students

**James B. Duke Fellowships.** The James B. Duke One-Hundredth Anniversary Fund provides fellowships for students who wish to pursue a program leading to the Ph.D. degree in the Graduate School at Duke University. Its objective is to aid in attracting and developing outstanding scholars at Duke. Selection of recipients is made by a faculty committee upon nomination by the appropriate department. These fellowships provide a \$3,000 stipend supplement for four years to any other award the student receives from the department, the Graduate school, or national fellowships. In addition, the student will receive a cost of relocation allowance of \$1,000 upon matriculation.

**International Fellowships** are available to outstanding students from foreign countries. Fellowships provide an annual stipend of \$10,300, plus tuition and health fees. They are renewable for three years. Recipients are chosen competitively from departmental nominees by a faculty committee.

**Julian Price Fellowship** provides competitive stipend and tuition for students in the humanities.

### Fellowships for Advanced Students

**Katherine Stern Fellowship:** dissertation-year fellowships provided for advanced graduate students.

**Named Instructorships in Arts and Sciences.** Five of these awards are provided jointly by the Graduate School and Trinity College. The student is required to teach one course during the academic year in which they hold the award.

**Aleane Webb Dissertation Research Fellowships** provide support for miscellaneous research projects associated with the dissertation.

**Conference Travel Awards** fund advanced students who are presenting papers at national conferences.

### International Research Opportunities

The Graduate School works to secure funding for advanced students who need to do research overseas. Below are a few of the programs currently available. Information on other fellowship opportunities may be obtained from the Center for International Studies, 2122 Campus Drive, Durham, N.C. 27706, telephone 919-684-2765.

**Advanced International Fellowship.** The Graduate School offers several research awards to students who must travel overseas. This fellowship carries a stipend of \$10,000.

**Predissertation/Dissertation Travel Awards** are provided for overseas research travel.

**Organization for Tropical Studies.** The Graduate School provides limited funding for students to travel to Costa Rica to participate in this important program.

**Sigma Xi.** Both the national and local chapters of this scientific honorary society offer research grants to graduate students. The Graduate School currently provides matching funding for these awards.

**Exchange Programs.** The Graduate School has developed exchange programs with a number of foreign universities, including the Free University of Berlin, and Potsdam, Saltzburg, and Humbolt universities.

**Social Science Research Council—Predissertation Fellowships** offers important international fellowships at the early stages of research. Graduate School participation in this program also includes workshops treating problems and opportunities students may encounter while in the field.

## GRADUATE FELLOWSHIPS FOR MINORITY STUDENTS

**Duke Endowment Fellowships.** The Duke Endowment fellowship provides four years of graduate support. A stipend of \$11,000 for each academic year, plus payment of tuition and registration and health fees for the fall and spring semesters is provided. Support for years one and two is provided by the Graduate School. Support for years three and four is provided by the department and may include service in the form of a research or teaching assistantship. In addition, in the fifth or final year, fellows are eligible to compete for dissertation support.

**Presidential Fellowships.** The Presidential Fellowship provides four years of graduate support. A stipend of \$11,000 for each academic year, a book award of \$500, plus payment of tuition and registration and health fees for the fall and spring semesters is provided. Support for years one and two is provided by the Graduate School. Support for years three and four is provided by the department and may include service in the form of a research or teaching assistantship. In addition, in the fifth or final year, fellows are eligible to compete for dissertation support.

**Patricia Roberts Harris Fellowship Program.** This program makes direct fellowship grants available to colleges and universities for the purpose of providing financial support to minority and women graduate and professional students who demonstrate financial need. Duke has received fellowship support through this program and will continue to apply for this support for our graduate departments. The fellowships are funded by the Department of Education and are awarded for up to three years of graduate study.

**The National Consortium for Educational Access (NCEA) Fellowship.** The NCEA is a partnership agreement between historically black colleges and universities, Ph.D.-degree granting institutions, and corporations. The goals of the NCEA are (1) to increase the pool of black Americans holding the Ph.D. degree in disciplines where they are now underrepresented; and (2) to address the underrepresentation of black faculty in the nation's colleges and universities. The NCEA provides fellowship support for both students and faculty enrolled in a member Ph.D.-granting institution. Students are eligible to receive a minimum of \$3,000 per year, while faculty are eligible for a minimum of \$5,000 per year in assistance. These fellowships are in addition to financial assistance the Ph.D. candidates receive from the participating institution. Students can apply for this fellowship directly through the NCEA by obtaining an application from a member institution or by writing to: Dr. Leroy Ervin, Executive Director, National Consortium for Educational Access, 296 Interstate North Parkway, Suite 100, Atlanta, GA 30339.

**National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM).** The National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc., is a tax-exempt, nonprofit corporation. GEM is jointly sponsored through a membership arrangement between employer and university members. GEM offers fellowships to minority students pursuing the M.S. or Ph.D. degrees in engineering, and Ph.D.'s in science. For application and other information e-mail [gem.1@nd.edu](mailto:gem.1@nd.edu) with your complete mailing address or call GEM at (219) 631-7771.



## DEPARTMENTAL FELLOWSHIPS, ENDOWMENTS, RESEARCH AND INSTRUCTIONAL ASSISTANTSHIPS

The majority of funding available for graduate study is provided by the student's department. Below are listed some of the ways a student may be supported. For specific information, contact the program director of graduate studies.

**Fellowships and Scholarships:** various departments offer fellowship stipends (ranging up to \$15,000), and tuition scholarships to students pursuing graduate studies. Information may be obtained from the individual departments.

**Endowed Fellowships:** Many departments offer endowed fellowship support. These include the Gurney Harris Kearns and the Gertrude Weil Fellowships in Religion, the Frank T. de Vyver and the Calvin Bryce Hoover Fellowships in Economics, the Clare Hamilton Memorial Endowed Fellowship in Clinical Psychology, the Charles R. Hauser Fellowship in Organic Chemistry, the Robert R. Wilson Fellowship in English, and the Anne McDougall Memorial Award in Women's Studies. Selection for these fellowships is made through faculty committees.

**Research Assistantships.** Appointments are available for graduate students whose special training and qualifications enable them to serve as assistants to individual staff members in certain departments. Stipends may be up to \$15,000 depending on the nature of the assistance and the assisting time required.

**Part-time Instruction.** Several departments offering graduate work have exceptionally qualified graduate students work as part-time instructors, tutors, and teaching assistants. Amounts of these assistantships vary and interested applicants should contact their departments directly.

## PAYMENT OF AWARDS

The payment of stipends for graduate assistantships and fellowships starts on September 25 and is made in equal payments on the twenty-fifth day of each month thereafter. Fellowship stipends are paid on the last working day of the month, beginning in September. Under the Tax Reform Act of 1986, the only graduate student financial assistance exempt from taxation are amounts paid for tuition, fees, books, supplies, and equipment required for course instruction. If services are required for payment of tuition and fees, then that tuition is considered income and is subject to taxation. In some cases, tuition paid to foreign students will also be taxable, depending on the tax treaty for the students home country. The Graduate School office will supply detailed information.

It is the responsibility of the student to be sure that tuition and fees are paid or that arrangements have been made with the appropriate office or department for submission of tuition payment notices to the bursar (101 Allen Building). Graduate students should contact either the director of graduate studies in their department or the Graduate School financial aid coordinator (120 Allen Building) depending upon the type of award. Faculty, senior administrative staff, employees, and eligible spouses not in degree programs should contact Jennniifer Frazier (705 Broad Street) regarding tuition benefits.

**Satisfactory Progress.** Graduate students are expected to make satisfactory progress in their programs in order to remain enrolled in the Graduate School or to receive financial aid. Qualitative and quantitative requirements regarding formal coursework are detailed under the chapter of this bulletin entitled "General Academic Regulations," including regulations and regarding unsatisfactory or failing grades in major or related courses. Additional requirements may be imposed by individual departments, which are responsible for certifying at the conclusion of each academic year the satisfactory progress of all enrolled students. Finally, the Graduate School has established normative time requirements for completion of various stages of graduate degree work. Failure to meet expected time frames requires a review of the student's situation by the dean of

the Graduate School, as specified in the chapter on "General Academic Requirements." See also the section below on "Restrictions" under Payment of Accounts (page 43).

## **LOANS**

Students who anticipate a need to supplement their financial resources through loans or college work-study employment must obtain and complete Free Application for Federal Student Aid. These forms are available at most financial aid offices or from the Financial Aid Coordinator, Graduate School, Duke University, Durham, North Carolina 27708. A student seeking a loan should contact his or her state lending agency, or request an application from the Financial Aid Office.

Students who are enrolled at least half time, who are U.S. citizens at permanent residents, and who meet the federal criteria for need are eligible for loans. Loan funds are provided through the Carl Perkins Student Loan Program after a student has borrowed the maximum from the Federal Stafford Loan Program. Generally, loans made from these funds, as is the case with loans from state agencies, bear no interest charge to qualified borrowers while they maintain student status and for a short period thereafter. Interest during the repayment period is at a favorable rate.

Inquiries concerning loans should indicate the department of intended matriculation and include all pertinent information concerning application to a state agency. These inquiries should be addressed to the Financial Aid Coordinator, Box 90061, Graduate School, Duke University, Durham, North Carolina 27708-0061.

## **WORK-STUDY PROGRAM EMPLOYMENT**

Funds are available through the college work-study program for short-term or part-time employment of graduate students. A student who wishes to apply for work-study must complete a Free Federal Financial Aid form. Students considering the possibility of work-study for the fall should submit Free Federal Financial Aid forms by April 15. Eligibility requirements are similar to those of the federal loan programs. In addition to departmental employment opportunities, the placement office maintains a listing of employment openings for students.

## **SUMMER FINANCIAL AID**

A limited amount of financial aid is available to students in summer study. Summer financial aid, determined according to demonstrated need, may consist of a departmental award, institutional grant funds, instruction, and/or low interest loans from the Stafford Student Loan program and the Carl Perkins Student Loan program. To qualify for summer school aid, a student must be enrolled or accepted for enrollment at Duke during the academic year immediately preceding the summer for which aid is requested. Students must be registered for summer school in order to receive summer support. (Students enrolled only for the summer may be eligible to borrow from outside lenders under the Stafford program in their home states or from the schools at which they are regularly enrolled. They should contact their college's financial aid office or the state's department of higher education for information and applications.) The college work-study aid is determined by the financial aid office based upon the student's financial need and the availability of funds. Graduate awards are determined by departments depending on usual criteria and availability of funds.

## **Student Expenses**

Although many students will receive financial assistance for their graduate education, students are responsible for ensuring that they have the means to support themselves, and the ability to pay tuition and fees due the university. Below is a summary of expected costs.

## **COST OF LIVING**

For 1996-97, the estimated cost of living in Durham for a single U.S. citizen (including health insurance but no other university fees) is approximately \$10,000 for the academic year. Obviously this cost will vary with individual needs. For a specific estimate of the cost of education for need-based awards or loan certification, contact the Graduate School Financial Aid Office. Cost may also differ for international students; contact Graduate Admissions for further information.

## **TUITION AND FEES**

### **Tuition**

*The following figures are estimates for 1996-97, and are subject to change. Estimates for 1997-98 are not yet available.*

Tuition is charged on a per semester basis for Ph.D. students, and on a per unit basis for masters and nondegree students. (The tuition rate for the masters programs in physical therapy and international development policy are set separately from other graduate programs; information concerning these rates can be obtained from the program directors.)

For new Ph.D. students entering in 1996-97, the charge for tuition is \$7,200 per semester. A charge for tuition is levied for six semesters of graduate study. One semester of credit may be granted for those entering with a previous graduate degree or for nondegree work done at Duke prior to matriculation.

For masters and nondegree students, the tuition for 1996-97 is \$600 per unit or semester hour.

### **REGISTRATION FEE**

All graduate students, with the exception of students registered through Continuing Education or the Master of Arts in Liberal Studies Program, will be charged a registration fee for every semester of residence. For 1996-97, the registration fee charge is \$1,000 per semester. Registration for summer 1997 is also \$1,000.

### **TRANSCRIPT FEE**

All entering students will be charged in the fall semester a one-time mandatory fee of \$30 for transcripts. This fee entitles the student to an unlimited number of Duke transcripts.

### **STUDENT HEALTH FEE**

All full-time students and part-time degree candidates are assessed a fee each semester for the use of the Student Health Service. For fall and spring, the fee is estimated at \$400 (\$200 each semester). For summer, the fee is estimated at \$125. This fee is distinct from health insurance, and does not provide major medical coverage. For the services covered by this fee see the chapter "Student Life".

### **HEALTH INSURANCE**

Students will be charged for health insurance in the fall semester, unless proof of other health insurance is provided. For 1996-97, the Student Health Insurance was \$600 for the full year. Information on the coverage provided by this insurance is available from the Office of the Bursar.

### **STUDENT ACTIVITY FEE**

All graduate students will be charged a student activity fee of \$7 per semester.



OTHER FEES

**Thesis or Dissertation Fees.** Fees incurred in connection with a thesis or dissertation are currently as follows:

|  |      |
|--|------|
| Binding fee, three university copies of thesis or dissertation | \$25 |
| Microfilming fee (doctoral degree only) upon final submission  | \$50 |
| Copyright fee (doctoral degree only), optional                 | \$35 |

**Marine Laboratory Fee.** For Marine Laboratory investigators' research table fee, see the publication *Marine Laboratory 1995*.

**Audit Fee.** Auditors are permitted on a space available basis with the consent of the instructor. Students registered full time during fall and spring may audit courses without charge. Audit fees are \$160 per course for other students.

**Vehicle Fee.** Students should contact the University Parking Services Office (717 Broad Street) regarding parking fees.

PAYMENT OF ACCOUNTS FOR FALL AND SPRING

The Office of the Bursar will issue invoices to registered students for tuition, fees, and other charges approximately four to six weeks prior to the beginning of classes each semester. The *total amount due* on the invoice is payable by the invoice late payment date which is normally one week prior to the beginning of classes. Inquire at the Bursar's Office, (919) 684-3541, if an invoice has not been received three weeks prior to the first day of classes, so that payment can be forwarded while a duplicate invoice is issued to document the balance owed. *As part of the admission agreement to Duke University, a student is required to pay all invoices as presented.* If full payment is not received, a late payment charge as described below will be assessed on the next invoice and certain restrictions as stated below will be applied. Failure to receive an invoice does not warrant exemption from the payment of tuition and fees nor from the penalties and restrictions. Nonregistered students will be required to make payment for tuition, fees, required deposits, and any past due balance at the time of registration.

**Monthly Payment Option.** The Monthly Payment Option Plan allows students to pay all or part of the academic years' expenses in ten equal monthly payments from July 1 to April 1. The only cost is an annual, nonrefundable fee of \$85. The participation fee can be paid by Visa or Mastercard. Payments may be made by check or by bank draft. Questions regarding this plan should be directed to Tuition Management Services, 1-800-722-4867 or 401-849-1550. At renewal, the plan can be extended to twelve months. The monthly payments can be increased or decreased without additional costs.

**Late Payment Charge.** If the total amount due on an invoice is not received by the invoice late payment date, the next invoice will show a penalty charge of 1 1/4 percent per month assessed on the past due balance regardless of the number of days past due. The past due balance is defined as the previous balance less any payments and credits received on or before the late payment date and also any student loans or scholarship memo credits related to the previous balance which appear on the invoice.

**Restrictions.** An individual will be in default if the total amount is not paid in full by the due date. A student in default will not be allowed to receive a transcript of academic records, have academic credits certified, go on leave of absence, or receive a diploma at graduation. In addition, an individual in default may be subject to withdrawal from school and have the account referred to a collection agency. If an account is referred to a collection agency, the individual will be responsible for all applicable collection and/or court costs.

**Reduction in Registration and Tuition.** Full refunds are granted students who reduce registration on the drop/add date at the beginning of each semester.

**Refunds for Withdrawal from School during Fall and Spring Semesters.** For students who withdraw from school or who are withdrawn by the university, refunds of tuition are governed by the following policy.

1. In the event of death, refund of full tuition and fees will be granted.
2. In all other cases of withdrawal from the university, students may have tuition refunded according to the following schedule:
  - a. Withdrawal before classes begin: full refund;
  - b. Withdrawal during the first or second week of classes: 80 percent refund (fees will not be refunded);
  - c. Withdrawal during the third, fourth, or fifth week of classes: 60 percent refund (fees will not be refunded);
  - d. Withdrawal during the sixth week: 20 percent refund (fees will not be refunded);
  - e. Withdrawal after the sixth week: no refund.
  - f. Tuition charges paid from grants or loans will be restored to those funds on the same pro rata basis and will not be refunded or carried forward.
3. If a student has to drop a course for which no alternate registration is available, drops special fee courses (music, golf, etc.), or drops a paid audit during the first two weeks of the drop/add period, a full refund may be granted with the approval of the dean. (The student health fee will not be refunded.)

**Special Tuition Benefits for Employees.** The Graduate School recognizes a special obligation to encourage the professional and personal advancement of employees. The university thus grants reductions in tuition to eligible employees enrolling in courses offered by the university. Employees should consult the Benefits Office, 705 Broad Street, (919) 684-6723, for eligibility and payment requirements.





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## *Registration*



## Registration

*All students who enrolled prior to fall 1994 should consult the bulletin of their year of matriculation for registration procedures and requirements.*

**Registration Requirements.** All students must register each fall and spring semester for "continuation" and pay a registration fee each semester until all degree requirements are completed, unless waived by an approved leave of absence granted by the dean. Failure to maintain "continuation" registration each fall and spring will result in administrative withdrawal from the university.

*Leave of Absence.* Students who have been on leaves of absence and who intend to resume a degree program must give the department and the dean notice of this intention two months before registration.

*Doctoral students.* In addition to "continuation," doctoral students must also register for a total of 6 semesters of full-time tuition. For Ph.D. students, approved transfer of an earned graduate degree may reduce the number of semesters of full-time tuition required for the degree to five semesters. After the 6 semesters of tuition, doctoral students will be charged only the registration fee. Specific course requirements for doctoral students are set by the departments.

*Master's students.* A master's student (except for those students enrolled in the two-year physical therapy and public policy studies programs) will register for a minimum of 30 units of degree credit and for any course units beyond the 30 required of their program. A registration fee and "continuation" registration for each semester are also required. Approved transfer course work into a master's program will *not* reduce the minimum registration of 30 units for a master's degree at Duke University.

*Registration Periods.* All students who are enrolled in the Graduate School and who have not been granted a leave of absence by the dean must register each fall and spring until all degree requirements are completed. New students will register immediately prior to the first day of classes in either term; continuing students register during

the announced registration periods (set by the Registrar's Office) in November and March.

*Late Registration.* All students are expected to register at the times specified by the university. A late registration fee of \$25 is charged any student registering late, including a current student who delays registering until the registration for new students.

*Change of Registration.* During the first two weeks of the fall or spring semester, registration may be changed with the approval of the director of graduate studies if no reduction of fee is entailed. If fees are reduced, the approval of the dean of the Graduate School is required and must be received no later than the first week of the semester.

*Summer Registration.* Students who are in residence at Duke University during the spring and who plan to enroll for courses in the summer session may have their course programs approved by the director of graduate studies during the week of Graduate School registration in March. Summer session students may register at announced times beginning with the March registration period and up to the Wednesday preceding the start of the appropriate term. Graduate students who are in residence during the summer session, but not enrolled in any courses, pay only the "continuation" fee.

The university does not mail statements for summer session tuition and fees. All tuition and fees should be paid in the Office of the Bursar (101 Allen Building) at least *five full working days* prior to the first day of class (see summer session calendar). Students who fail to register and pay all tuition and fees before this deadline will be assessed a late charge. Failure to pay tuition and fees by the end of the drop/add period will result in administrative withdrawal of the student.

Summer session students may add a course or courses before or during the first three days of the term. Courses may also be dropped before and during the first three days, but a 20 percent tuition fee will be charged (1) if the course is not dropped before the first day, and (2) the dropped course(s) results in a total tuition reduction. Courses dropped after the third day of classes are not eligible for tuition refund.

*Additional Registration Requirements.* It is necessary to be a fully registered student according to the regulations listed in the chapter on "Registration" in order to be eligible for library carrel and laboratory space, student housing, university and some outside loans, and the Student Health Service, including accident and sickness insurance. See the chapter on "Student Life."





## *Regulations*

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## General Academic Regulations

**Credits.** The following regulations pertain to credits earned outside the Duke University Graduate School:

***Graduate Credit Earned before the A.B. Degree Is Granted.*** Ordinarily no credit will be allowed for graduate courses taken before a student has been awarded the A.B. or B.S. degree. However, an undergraduate student at Duke University, who at the beginning of the final semester lacks no more than three courses in order to fulfill the requirements of the bachelor's degree, may apply for admission to the Graduate School for that final semester. If the student meets the requirements for admission, permission may be obtained from the dean of the Graduate School to enroll for graduate courses to bring the total program to no more than four courses. (Only one semester of full-time tuition credit for the Ph.D. program will be granted to nondegree students.). In addition to undergraduate registration, the student must register in and pay tuition for those courses to the Graduate School at the beginning of the semester in which graduate credit is to be earned in order for the courses to be credited toward a graduate degree program.

***Transfer of Graduate Credits.*** For master's programs, the transfer of graduate credit does not reduce the required minimum registration of 30 units for a master's degree at Duke. For Ph.D. students, one semester of full-time tuition credit may be given if the student has completed a graduate degree at another institution. No credit will be given to those students who wish to receive a master's degree en route to the Ph.D. Up to one semester of tuition credit may be given to students who have completed graduate course work at Duke as nondegree students. Financial credit for the above programs will be given only after the student has completed one full-time semester in a degree-granting graduate program. (For Ph.D. students, departments are free to consider previous course work in determining further course requirements for the student—academic credit is distinct from financial credit or registration requirements for the degree.)

**Grades.** Grades in the Graduate School are as follows: *E*, *G*, *S*, *F*, and *I*. *E* (excellent) is the highest mark; *G* (good) and *S* (satisfactory) are the remaining passing marks; *F* (failing) is an unsatisfactory grade; and *I* (incomplete) indicates that some portion of the student's work is lacking, for an acceptable reason, at the time the grades are reported.



For students enrolled in the Graduate School, the instructor who gives an *I* for a course specifies the date by which the student must make up the deficiency. If a course is not completed within one calendar year from the date the course ended, the grade of *I* becomes permanent and may not be removed from the student's record. The grade of *Z* indicates satisfactory progress at the end of the first semester of a two-semester course. For unclassified graduate students enrolled in the summer session, a temporary *I* for a course may be assigned after the student has submitted a written request. If the request is approved by the instructor of the course, then the student must satisfactorily complete the work prior to the last day of classes of the subsequent summer term. A grade of *F* in a major course normally occasions withdrawal from a degree program not later than the end of the ensuing semester or term; a grade of *F* in any other course occasions at least academic probation.

**Reciprocal or Interinstitutional Agreements with Neighboring Universities.** Under a plan of cooperation between Duke University and the University of North Carolina at Chapel Hill, North Carolina Central University in Durham, and North Carolina State University at Raleigh, full-time students properly enrolled in the Graduate School of Duke University during the regular academic year, and paying full tuition to this institution, may be admitted to a maximum of two courses per semester at one of the other institutions in the cooperative plan. Under the same arrangement, students in the graduate schools in the neighboring institutions may be admitted to course work at Duke University. Credit so earned is not defined as transfer credit. To take advantage of this arrangement during either summer session term, the student registers for 3 units of credit at the home institution and 3 units of credit at the other institution, for a total of 6 units. All interinstitutional registrations involving extra-fee courses or special fees required of all students will be made at the expense of the student and will not be considered a part of the Duke University tuition coverage. This reciprocal agreement does not apply to contract programs such as the American Dance Festival.

**Identification Cards.** Graduate students are issued identification cards which they should carry at all times. The card is a means of identification for library privileges, athletic events, and other university functions or services open to university students. Students will be expected to present their cards on request to any university official or employee. The card is not transferable, and fraudulent use may result in loss of student privileges or suspension from the Graduate School. A report of the loss of a card must be given immediately to the registrar's office. The cost of a new ID card is \$5.

**Courses Primarily for Undergraduates.** With the approval of their director of graduate studies, master's degree students may take a total of two courses below the 200 level and have them count toward the 30 units required for their degree, provided that two conditions are met:

1. that such courses be over and above the graduate course requirements set by the department; and
2. that a grade of *B* or better be earned.

At the master's level, only two such courses will be counted toward the 30 units. Ph.D. students may take undergraduate courses with the approval of their director of graduate studies.

**Withdrawal from a Course.** For permissible changes during the first two weeks of the fall or spring semester and during the first three days of summer session term, see the chapter on "Registration." If a course is dropped without the necessary approval, the permanent record will, at the discretion of the dean of the Graduate School and with the permission of the instructor, list the course as *Withdrawal Error* (WE). If a course is dropped after the two-week period during the fall or spring or after the first three days of classes during the summer, the status of the student at the time of withdrawal from

the course will be indicated on the permanent record as *Withdrew Passing* (WP) or *Withdrew Failing* (WF).

***Interruption of Program and Withdrawal from the Graduate School.*** Students are expected to meet academic requirements and financial obligations, as specified elsewhere in this bulletin, in order to remain in good standing. Certain nonacademic rules and regulations must be observed also. Failure to meet these requirements may result in summary dismissal by the appropriate officer of the university.

The university reserves the right, and matriculation by the student is a concession to this right, to request the withdrawal of any student whose academic performance at any time is not satisfactory to the university. A student who wishes for any reason to withdraw from the Graduate School during the fall, spring, or summer session must notify in writing both the director of graduate studies in the major department and the dean of the Graduate School prior to the date of the expected withdrawal and no later than the published last day of classes for that semester or summer session. If students wish to withdraw from courses in the summer session, they must consult both the director of graduate studies in the major department and the director of the Summer Session. For refunds upon withdrawal, see the chapter on "Financial Information."

A student who, after successfully completing one semester of graduate study, must withdraw before completion of a graduate program may, with the approval of the major department, request the dean to issue a certificate of graduate study.

***Leave of Absence.*** A leave of absence for a period of time no longer than one calendar year may be granted because of medical necessity, full-time employment, receipt of an external award, or other acceptable reasons. A request for a leave of absence should be originated by the student, endorsed by the student's major professor and director of graduate studies, and submitted to the dean of the Graduate School for consideration prior to the beginning of the semester for which the leave is requested. A student is eligible to request a leave of absence only after having completed at least one semester at Duke. Time limitations which pertain to the various degrees and the completion of courses on which a grade of I (incomplete) was earned are not waived.

*See page 34 of this bulletin for further English proficiency requirements for foreign students.*

## Degree Regulations—The Master's Degrees

### MASTER OF ARTS/MASTER OF SCIENCE

***Prerequisites.*** As a prerequisite to graduate study in the major subjects, a student must have completed a minimum of 24 undergraduate semester hours—ordinarily 12 semester hours of approved college courses in the major subject and 12 semester hours in the major or in related work. Since some departments require more than 12 semester hours in the proposed field of study, students should read carefully the special requirements listed by their major departments in the chapter on "Courses of Instruction." If special master's requirements are not specified in this chapter and there is a question about the prerequisite, prospective students should write directly to the appropriate director of graduate studies.

***Language Requirements.*** The Graduate School requires no foreign language for the master's degree. Certain departments, however, do have language requirements and these must be satisfied before the master's examination can be taken. See the departmental listings in the chapter on "Courses of Instruction."

***Major and Related Subjects.*** Thirty units of graduate credit at Duke constitutes minimum enrollment for the Master of Arts and the Master of Science degrees. Students must present acceptable grades for a minimum of 24 units of graded course work, 12 of



which must be in the major subject. A minimum of 6 units of the required 24 must be in a minor subject or in related fields which are approved by the student's major department. The remaining 6 units of the required 24 may be taken either in the major or in related fields approved by the major department and the dean of the Graduate School.

Individual departments decide whether the M.A./M.S. program may be completed by submission of an approved thesis or by other academic exercises (see requirements listed in the chapter on "Courses of Instruction"). In either case, a maximum of 6 units may be earned by the completion exercises and the final examination.

**Thesis Requirements.** The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on a research problem. The thesis must be written in an acceptable style and should exhibit the student's competence in scholarly procedures. Requirements of form are set forth in the *Duke University Guide for the Preparation of Theses and Dissertations*, copies of which are available in the Graduate School office.

The thesis must be submitted in an approved form to the Graduate School on or before April 15 for a May degree, ten days before the final day of the second summer term for a September degree, ten days before the final day of the fall semester for a December degree, and at least one week before the scheduled date of the final examination. The copies of the thesis will be distributed by the student to the several members of the examining committee. Two copies for the library and one copy for the adviser will be bound upon payment of the university binding fee of \$25.

**The Examining Committee and the Examination.** The department's director of graduate studies recommends an examining committee normally composed of three members of the graduate faculty, one of whom is usually from a department other than the major department or from an approved minor area within the major department. Nominations for membership on this committee are submitted for approval to the dean of the Graduate School at least one week preceding the final examination.

The committee will conduct the examination and certify the student's success or failure by signing the card provided by the Graduate School office. This card indicates completion of all requirements for the degree. If a thesis is presented, the committee members also sign all copies of the thesis, and the candidate then returns the original and first two copies to 013 Perkins Library.

#### **MASTER OF PUBLIC POLICY**

See page 225 for a description of the M.P.P. degree.

#### **MASTER OF ARTS IN TEACHING**

See page 259 for a description of the M.A.T. degree.

### **Additional Master's Regulations**

**Filing the Intention to Receive Degree.** On or before February 1 for a May degree, on or before July 1 for a September degree, or on or before November 1 for a December degree, and at least one month prior to the final examination, the student must file in the Office of the Graduate School, on the official form, a declaration of intention to receive degree. The declaration of intention presents the title of the thesis or specifies alternative academic exercises on which the degree candidate will be examined. The declaration must have the approval of both the director of graduate studies in the major department and the chair of the student's advisory committee.

**Transfer of Credits.** A maximum of 6 units of graduate credit may be transferred for graduate courses completed at other schools. Such units will be transferred only if the student has received a grade of B (or its equivalent) or better. The transfer of graduate



credit does not reduce the required minimum registration of 30 units for a master's degree at Duke. Requests for transfer should be submitted on the approved Graduate School form.

**Nondegree Students.** Credit for graduate courses taken at Duke by a student (not undergraduate) before degree admission to the Graduate School or while registered as a nondegree student through the Office of Continuing Education or the Graduate School may be carried over into a graduate degree program if (1) the action is recommended by the student's director of graduate studies and approved by the dean, (2) the amount of such credit does not exceed 12 units, (3) the work has received grades of G or better, (4) the work is not more than two years old, and (5) the student applies for and is granted formal admission into a degree program.

**Time Limits for Completion of Master's Degrees.** Master's degree candidates who are in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of their first registration in the Graduate School. Candidates must complete all requirements within six calendar years of their first registration.

To be awarded a degree in May, the recording of transfer credit must be completed by the first day of the final examination period. If a thesis is one of the requirements, it must be submitted to the Graduate School office no later than April 15. Candidates desiring to have their degrees conferred on September 1 must have completed all requirements, including the recording of transfer of credit, by the final day of the Duke University summer session. Candidates completing degree requirements after that date and during the fall will have their degrees conferred on December 30.

## Degree Regulations—The Doctoral Degree

**Requirements.** The formal requirements for the Ph.D. degree are as follows: (1) payment of 6 semesters of full-time tuition (or five if transfer credit has been approved), (2) major and related courses, (3) foreign language(s) in many departments, (4) a supervisory committee for the student's program of study, (5) residence, (6) preliminary examination, (7) dissertation, and (8) final examination.

**Major and Related Work.** The student's program of study demands substantial concentration on courses in the major department, plus coursework in related minor fields as determined by individual programs. However, a minimum of two courses in a related field approved by the major department must be included. A few programs have been authorized by the executive committee of the graduate faculty to utilize courses in fields within the major department in fulfilling the related field requirement. If there are deficiencies in a student's undergraduate program, departments may also require certain undergraduate courses to be taken. In all cases the student's supervisory committee will determine if the student must meet requirements above the minimum.

**Foreign Languages.** The Graduate School has no foreign language requirement for the Ph.D. Some departments require two languages; other departments have no foreign language requirements. For specific departmental requirements, see the chapter on "Courses of Instruction" or contact the appropriate director of graduate studies.

**English Language Proficiency.** All international Ph.D. students are subject to the requirement described on page 34 of this bulletin.

**Committee to Supervise the Program of Study.** As early in a student's course of study as is practicable and not later than two months before the preliminary examination, the director of graduate studies in the major department will nominate for the approval of the dean a supervising committee consisting of at least four members, with one member designated as chair. This committee should include at least three graduate

faculty members of the major department and, usually, at least one from outside the department. For programs in which approval has been granted for related work from a clearly differentiated division within the department, one member of the committee may be chosen from that division. This committee, with all members participating, will determine a program of study and administer the preliminary examination.

**Residence.** The minimum residence requirement is one academic year of full-time registration at Duke (that is, two consecutive semesters of full-time tuition).

**Time Limits.** Ordinarily a student registered for full-time study should pass the preliminary examination by the end of the third year. A student who has not passed the examination by this time must file with the dean of the Graduate School a statement, approved by the director of graduate studies in the major department, explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the middle of the fourth year.

The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate may, with the approval of the committee and the director of graduate studies, petition the dean of the Graduate School for an extension of up to one year. If this extension is granted and the dissertation is not submitted and accepted by the new deadline, the student may be dropped from candidacy. The student must then pass a second preliminary examination to be reinstated as a candidate for the degree. In such cases, the time limit for submitting the dissertation will be determined by the dean of the Graduate School and the candidate's committee.

Ordinarily, credit is not allowed for graduate courses (including transfers) or foreign language examinations that are more than six years old at the date of the preliminary examination. Similarly, credit will not be allowed for a preliminary examination that is five years old at the date of the final examination. In cases of exceptional merit, however, the dean of the Graduate School may extend these limits. Should the five-year limits be exceeded, the student's department must submit to the dean specific requirements for revalidating credits.

**Preliminary Examination.** A student is not accepted as a candidate for the Ph.D. degree until the preliminary examination has been passed. The examination ordinarily covers both the major field and related work, although some departments cover such field expertise in a separate qualifying examination. Please consult the chapter on "Courses of Instruction" for individual department procedures. In the summer a preliminary examination may be scheduled only between the opening and closing dates of the summer session.

Successful completion of the preliminary examination requires at least three affirmative votes and no more than one negative vote. The sole exception to this policy is that a negative vote cast by the chair of the examining committee will mean a failure on the examination. A student who fails the preliminary examination may apply, with the consent of the full supervisory committee and the dean of the Graduate School, for the privilege of a second examination to be taken no earlier than three months after the date of the first. Successful completion of the second examination requires the affirmative vote of all committee members. Failure on the second examination will render a student ineligible to continue a program for the Ph.D. degree at Duke University.

**The Dissertation.** The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

One month before the dissertation is presented and no later than February 1 preceding the May commencement, July 1 for a September degree, and November 1 for a December degree, the student must file with the dean of the Graduate School, on the official form, a declaration of intention to receive degree. This form should indicate the



approved title of the dissertation and be signed by both the director of graduate studies of the student's major department and the professor who directs the dissertation.

The basic requirements for preparing the dissertation (type of paper, form, and binding) are prescribed in the *Guide for the Preparation of Theses and Dissertations*, copies of which are available in the Graduate School office.

The dissertation must be completed to the satisfaction of the professor who directs the dissertation, members of the student's advisory committee, and the dean of the Graduate School. A copy of the dissertation must be submitted to the dean of the Graduate School on or before April 1 preceding the May commencement, ten days before the end of the Duke summer session for a September degree, or ten days before the end of the fall semester for a December degree. The dissertation must be submitted to the Graduate School office at least seven days before the scheduled date of the student's examination.

All doctoral dissertations are published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may copyright them if they wish. Abstracts are published in *Dissertation Abstracts International*.

One extra copy of the abstract (not more than 350 words long) with signature page is submitted when the dissertation is presented at 013 Perkins (Photographic Services). A nonrefundable fee of \$50 is charged for microfilming. If copyright is desired, an additional fee of \$35 is charged. The original and two copies will be bound at a cost of \$25.

**Final Examination.** The final examination is administered by at least four members of the supervising committee. The final oral examination shall be primarily on the dissertation; however, questions may be asked in the candidate's major field. Except in unusual circumstances approved by the dean, a final examination will not be scheduled when the university is not in session.

Successful completion of the final examination requires at least three affirmative votes and no more than one negative vote. The sole exception to this policy is that a negative vote cast by the chair of the examining committee will mean a failure on the examination. A student who fails the final examination may be allowed to take it a second time, but no earlier than six months from the date of the first examination. Permission to take the second examination must be obtained from the professor who directed the dissertation and from the dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

**Deposit of the Dissertation.** After passing the examination, candidates return the original and the first two copies of the dissertation, properly signed to 013 Perkins Library. At this time they sign the microfilming agreement and present proof of payment of binding, microfilming, and, if applicable, copyright fees.

## Commencement

Graduation exercises are held once a year, in May, when degrees are conferred on and diplomas are issued to those students who have completed requirements by the end of the spring. Those who complete degree requirements by the end of the fall or by the end of a summer term receive diplomas dated December 30 or September 1, respectively. There is a delay in the mailing of September and December diplomas because diplomas cannot be issued until they are approved by the Academic Council and the Board of Trustees.

## Standards of Conduct

Duke University expects and will require of all its students cooperation in developing and maintaining high standards of scholarship and conduct.



Students are expected to meet academic requirements and financial obligations, as specified elsewhere in this bulletin, in order to remain in good standing. Certain nonacademic rules and regulations must be observed also. Failure to meet these requirements may result in summary dismissal by the appropriate officer of the university.

The university wishes to emphasize its policy that all students are subject to the rules and regulations of the university currently in effect or which, from time to time, are put into effect by the appropriate authorities of the university. Students, in accepting admission, indicate their willingness to subscribe to and be governed by these rules and regulations and acknowledge the right of the university to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the university.

Duke University, as a community of scholars, strongly relies upon the standard of academic integrity. Plagiarism and other forms of academic dishonesty represent a corruption of this integrity and, as such, cannot be tolerated within the community. Ignorance of what constitutes academic dishonesty is no excuse for actions which violate the integrity of the community. In a community which builds on the notion of academic integrity, the threat of academic dishonesty represents an intolerable risk. Students unsure about the university definition of plagiarism may wish to consult the *Bulletin of Duke University: Information and Regulations* (especially the chapter on "Academic Honesty").

## DUKE UNIVERSITY HARASSMENT POLICY

- I. Duke University is committed to protecting the academic freedom and freedom of expression of all members of the university community. This policy against harassment shall be applied in a manner that protects the academic freedom and freedom of expression of all parties to a complaint. Academic freedom and freedom of expression include but are not limited to the expression of ideas, however controversial, in the classroom, residence hall, and, in keeping with different responsibilities, in workplaces elsewhere in the university community.
- II. Definition of harassment at Duke University:
  - A. Harassment is the creation of a hostile or intimidating environment, in which verbal or physical conduct, because of its severity and/or persistence, is likely to interfere significantly with an individual's work or education, or affect adversely an individual's living conditions.
  - B. Sexual coercion is a form of harassment with specific distinguishing characteristics. It consists of unwelcome sexual advances, requests for sexual favors, or other verbal or physical conduct of a sexual nature when:
    1. submission to such conduct is made, explicitly or implicitly, a term or condition of an individual's employment or education; or
    2. submission to or rejection of such conduct is used as a basis for employment or educational decisions affecting an individual.
  - C. The conduct alleged to constitute harassment under this policy shall be evaluated from the perspective of a reasonable person similarly situated to the complainant and considering all the circumstances.
- III. In considering a complaint under the Duke University Harassment Policy, the following understandings shall apply:
  - A. Harassment must be distinguished from behavior which, even though unpleasant or disconcerting, is appropriate to the carrying out of certain instructional, advisory, or supervisory responsibilities.

- B. In so far as Title VII (Equal Employment Opportunity) of the Civil Rights Act of 1964 is applicable (i.e., in complaints concerning carrying out of noninstructional employment responsibilities), the university will use the definition of sexual harassment found in the Equal Employment Opportunity Commission (EEOC) Guidelines: "conduct of a sexual nature . . . when such conduct has the purpose or effect of unreasonably interfering with an individual's work performance or creating an intimidating, hostile, or offensive working environment."
- C. Instructional responsibilities require appropriate latitude for pedagogical decisions concerning the topics discussed and methods used to draw students into discussion and full participation.

#### IV. The following behaviors are also prohibited by the Harassment Policy:

##### A. Reprisals.

- 1. Against the Complainant: It is a violation of Duke's Harassment Policy to retaliate against a complainant for filing a charge of harassment. A complaint of retaliation may be pursued using the steps followed for a complaint of harassment. When necessary, the appropriate dean or other university officer may monitor student grading or faculty/staff reappointment, tenure, promotion, merit review, or other decisions to ensure that prohibited retaliation does not occur.
- 2. Against the respondent: Lodging a complaint of harassment is not proof of prohibited conduct. A complaint shall not be taken into account during reappointment, tenure, promotion, merit, or other evaluation or review until a final determination has been made that the university's harassment policy has been violated.

##### B. Knowingly false or malicious complaints.

To file a knowingly false or malicious complaint of harassment or of retaliation is a violation of the harassment policy. Such conduct may be pursued using the steps followed for a complaint of harassment. A complaint under this provision shall not constitute prohibited retaliation.

##### C. Intentional breaches of confidentiality.

All participants in the harassment complaint resolution process, including the complainant and respondent, witnesses, advisors, mediators, members of hearing panels, and officers, shall respect the confidentiality of the proceedings. Breaches of confidentiality jeopardize the conditions necessary to the workings of internal procedures for resolution of claims of harassment. Participants are authorized to discuss the case only with those persons who have a genuine need to know.

A complaint alleging an intentional breach of confidentiality may be pursued using the steps followed for a complaint of harassment. Such a breach may also constitute an act of retaliation. A breach of confidentiality may void the outcome of any previously agreed-upon resolution to a complaint.

#### V. Individuals who believe they have been harassed, individuals charged with harassment, and individuals with knowledge of situations in which harassment may exist should consult Duke University's "Procedures for Resolution of Claims of Harassment."

#### VI. This harassment policy and the procedures for resolution of claims of harassment are only part of Duke University's effort to prevent harassment in our community. In addition to spelling out steps for making and resolving complaints, the university is also committed to programs of education to raise the level of understanding concerning the nature of harassment and ways to prevent its occurrence.



**Student Grievance Procedures.** It is the responsibility of the director of graduate studies to inform each graduate student of the appropriate channels of appeal. In normal circumstances, the director of graduate studies is the first to hear a complaint. If the complaint cannot be resolved satisfactorily at this level, the student may address, in turn, the department chair, the associate dean of the Graduate School, the dean of the Graduate School, the provost, and as a last resort, the president of the university.

**Judicial Code and Procedures.** In the spring of 1971, the Graduate School community ratified and adopted the following official judicial code and procedures:

### **I. Graduate School Judicial Code and Procedures**

A. A student, by accepting admission to the Graduate School of Duke University, thereby indicates willingness to subscribe to and be governed by the rules and regulations of the University as currently are in effect or, from time to time, are put into effect by the appropriate authorities of the University, and indicates willingness to accept disciplinary action, if behavior is adjudged to be in violation of those rules or in some way unacceptable or detrimental to the University. However, a student's position of responsibility to the authorities and the regulations of the University in no way alters or modifies responsibilities in relation to civil authorities and laws.

B. A graduate student at Duke University stands in a primary and unique relation of responsibility to the faculty in the major department, the faculty upon whose recommendation a graduate degree will or will not be awarded to the student. In matters which involve or may affect the student's intellectual or professional life, the student is directly responsible to this department and its representatives, and such matters should primarily be handled by the department.

C. Actions which appear to conflict with University-wide rules and regulations will fall under the jurisdiction of the University Judicial Board.

D. A student may elect to have the Dean of the Graduate School hear matters related to the student's conduct in addition to or instead of faculty members from the student's major department, or may elect to have such matters reviewed and judged by a judicial board instead of the Dean of the Graduate School or members of the faculty in the major department. (The constitution and procedure of the judicial board are detailed below.)

E. The Director of Graduate Studies in the student's major department may request that a student's actions be reviewed by the Judicial Board or by the Dean of the Graduate School.

### **II. The Graduate School Judicial Board**

A. *Composition.* The Graduate School Judicial Board shall have five members, serving for a period of two years: two students selected from the student body, two members of the Graduate Faculty appointed by the Executive Committee of the Graduate School, and one Associate or Assistant Dean appointed by the Dean of the Graduate School. The Board shall elect one of its members as Chairman. The Board shall have at its service a recording secretary to keep minutes of the hearings and of the Board's actions in a permanent, confidential record book. The Board will be constituted in order to hear cases in which the accused is a student currently enrolled in the Graduate School and which have been referred to it by the Director of Graduate Studies in the student's department, by the Dean of the Graduate School, or by the student himself.

B. *Preliminary Procedures.* If a student requests a hearing by the Judicial Board it must be done in writing, allowing its Chairman at least seventy-two hours to convene the Board. In addition, the Chairman shall not convene the Board until seventy-two hours after being asked to convene the Board. It is the responsibility of the Chairman of the Judicial Board fully to inform its members concerning the case and the reasons the case has been referred to the Board; and to prepare a written summary of this information for the Board, the Dean, and the student.

C. *Procedural Safeguards for the Hearing.* The Accused has the right to challenge any member of the Judicial Board on grounds of prejudice. If the Board decides to excuse one or more of its members for reasons given by the Accused, it shall consult with the Dean about the need for replacements. The Accused may choose an Adviser to assist in the defense. The Accused may also produce witnesses (including no more than two character witnesses), introduce documents, and offer testimony. A person having direct knowledge relevant to a case being heard by the Board is a material witness. The Judicial Board may request the appearance of material witnesses. The Board shall also request, upon written request of the Complainant or the Accused, the appearance of material witnesses. Witnesses shall be notified of the time, place, and purpose of their appearance. The Accused has the right to examine the written statement of any witness relevant to the case at least seventy-two hours before the hearing. The Accused has the right to be faced with any witness who has given a statement relevant to the case at the hearing if the witness's attendance can be secured.

The hearing will be conducted in private unless the Accused requests an open hearing. If any objection is raised to conducting an open hearing in any particular case, the Judicial Board shall decide the issue by majority vote. If the decision is made not to hold an open hearing, the Accused shall be informed in writing of the reasons for the decision.



The Judicial Board shall consider only the report of the Chairman, documents submitted into evidence, and the testimony of witnesses at the hearing in reaching its decisions.

D. *Conduct of the Hearing.* The hearing of any case shall begin with a reading of the charge by the Chairman in the presence of the Accused. The Accused shall then plead guilty or not guilty or move to terminate or postpone the hearing. The Accused may qualify a plea, admitting guilt in part and denying it in part. The Accused may not be questioned for more than one hour without recess.

At any time during the hearing, the Accused or the Judicial Board may move to terminate or to postpone the hearing or to qualify the plea or to modify its charge.

Pending verdict on charges (including appeal) against the Accused, status as a student shall not be changed, nor the right to be on campus or to attend classes suspended, except that the Chancellor or Provost may impose an interim suspension upon any member of the University community who demonstrates, by conduct, that continued presence on the campus constitutes an immediate threat to the physical well-being or property of members of the University community or the property or orderly functioning of the University.

E. *Sanctions and the Verdict.* The Graduate School Judicial Board shall have the power to impose the following penalties: expulsion, dismissal from the University with the recommendation that the person never be readmitted; suspension, dismissal from the University and from participation in all University activities for a specified period of time, after which the student may apply for readmission; disciplinary probation, placing the student on a probationary status for a specified period of time, during which conviction for violation of any regulation may result in more serious disciplinary action; restitution, payment for all, or a portion of property damage caused during the commission of an offense. Restitution may be imposed by itself or in addition to any of the other penalties. The Judgment shall consist of a finding of guilty or not guilty of the charge and, when the Accused is found guilty, a statement of the punishment assessed. On all questions, including the verdict and the finding of guilty or not guilty, the Board shall be governed by a majority vote. The Judicial Board may decide to rehear a case in which significant new evidence can be introduced. In addition, the defendant may request an appeal.

F. *Appeals.* The appellant may submit to the Dean a written statement containing the grounds for appeal and arguments. In such cases, the Dean should determine if the appeal should be granted, and the Dean can hear the case, or refer it to the appropriate faculty in the student's department or to the Judicial Board.

An appeal shall be granted on the following grounds: procedural error substantially affecting the rights of the accused; incompatibility of the verdict with the evidence; excessive penalty not in accord with "current community standards;" new evidence of a character directly to affect the judgment but on which the original tribunal had refused a new hearing.

### III. Amendment and Construction

This Judicial code and procedure and this constitution and procedure for the Graduate School Judicial Board may be amended at any time with due notice or publication by consent of the Dean, the Executive Committee, and the graduate students. Questions and problems not answered or anticipated by the foregoing may be resolved by the use of other existing institutions or by amendment.

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## *Courses of Instruction*



## Course Enrollment

Courses numbered 200-299 are sometimes open to qualified undergraduate students who have received permission of the instructor and the director of graduate studies. Undergraduate students are not permitted in any courses above 300. Double numbers separated by a hyphen indicate that credit is contingent upon completion of both courses. Double numbers separated by a comma indicate that although the course is a year-long course, credit may be received for either course or both courses.

The following symbols, suffixed to course numbers, identify the small group learning experiences: *S*, seminar; *P*, preceptorial; *T*, tutorial; *D*, discussion section. The *L* suffix indicates that the course includes laboratory experience. *C-L*: denotes a course that is cross-listed or a program under which a course is listed.

## African and Afro-American Studies

Professor Holloway, *Director* (408B Old Chemistry Building); Professor McLoyd; Professor of the Practice el Hamel; Research Professor Giddings; Associate Professor Lubiano; Assistant Professor Daniels

The African and Afro-American Studies Program (AAASP) offers a certificate in African and Afro-American Studies. Students enrolled in doctoral programs at the university are eligible and may work concurrently with their departments to satisfy the requirements for a certificate in African and Afro-American Studies. The curricular format is a trifold course of study that includes course work, teaching, and research. The award of a graduate certificate is carried on the student's official transcript upon completion of the program. Students enrolled in the graduate program are eligible to apply for AAASP-sponsored teaching assistantships for an undergraduate course in their department or for the programs' introductory course for undergraduates (Introduction to African and Afro-American Studies).

Graduate study leading to the certificate in African and Afro-American Studies encourages research and scholarship in all dimensions of the African and Afro-American experience. The graduate program is designed to provide access for students and scholars to a broad range of information and research from the humanities and social sciences, and the arts and professions, while taking advantage of the university's distinctive resources in each of these areas of study. Approximately seventy-five faculty in nearly 34 university departments and programs participate in AAASP and are available to mentor graduate students. Graduate students enrolled in the program are encouraged to participate in all African and Afro-American Studies Program events, to



audit the W. E. B. DuBois Lecture Series and Symposia, and to join with the faculty in the Colloquia Series: Representing Blackness.

A brochure is available upon request giving detailed information about requirements for the graduate certificate. For further information regarding application and enrollment in the Graduate Certificate Program in African and Afro-American Studies, contact the program director's office.

**200. Asian and African Languages and Literature.** See C-L: Asian and African Languages and Literature 205. 3 units. *Staff*

**235S. The Antebellum South.** See C-L: History 235S. 3 units. *S. Nathans*

**241. Classical Islamic Theology and Ethics.** See C-L: Religion 241. 3 units. *Cornell*

**278S. Black Political Participation.** See C-L: Political Science 278S. 3 units. *Orr*

**279S. Race, Racism, and Democracy.** See C-L: Cultural Anthropology 279S. 3 units. *Baker*

**309S, 310S. Seminar in Afro-American History, 1900 to the Present.** See C-L: History 309S, 310S. 3 units each. *Gavins*

**330S. Selected Topics in Brazilian History.** See C-L: History 330S. 3 units. *French*

**391. Special Topics.** Topics vary from semester to semester. 3 units. *Staff*

**399. Special Readings.** Consent of instructor required. 3 units. *Staff*

## Art and Art History

Associate Professor Powell, *Chair* (112A East Duke Building); Assistant Professor Abe, *Director of Graduate Studies* (111B East Duke); Professors Bruzelius and Wharton; Associate Professors Stiles and Van Miegroet; Assistant Professors Cernuschi, Cormack, and Rice; Professor Emeritus Markman; Adjunct Professor Mezzatesta

The Department of Art and Art History offers graduate work leading to the Ph.D. degree in art history. The doctoral program in the history of art is competitive with the leading art history programs in the country. It is distinctive in its size and funding pattern, academic goals, and faculty interests. We are committed to full and equal funding of our students, despite their different and individualized curricula, teaching, or workloads during their residence at Duke. In addition, admission to the program is at present limited to three new students per year. We seek to maintain a critical mass of around ten students.

The Ph.D. program in the history of art has connected itself proactively with the many interdisciplinary, theoretical, and international initiatives in the humanities at Duke. The doctoral program is distinguished by its flexibility and cross-disciplinarity. It requires a thorough grounding in the formal and iconographic aspects of artworks and monuments, as well as in their theoretical and historical contexts. Course work has been designed to prepare students for careers in art and architectural criticism, research and teaching in the academy, museum, and art gallery. Faculty in the program cover the broad range of traditional periods of art history, as well as more contemporary topics, such as cyberculture and hypermedia.

Concurrent with their work toward a Ph.D., students may satisfy the requirements for a Certificate of Museology. Students are required to have demonstrated their ability to read German and at least one other foreign language relevant to their chosen area of research before taking their preliminary examination. For further information on the program, prospective applicants may write to the director of graduate studies.

## For Seniors and Graduates

**201S. Topics in Greek Art.** Specific aspects of the art or architecture in the Greek world from the late Geometric to the Hellenistic periods. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 201S. C-L: Classical Studies 220S. 3 units. *Cormack*

**202S. Topics in Roman Art.** Selected topics in the art and architecture of late republican and imperial Rome. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 202S. C-L: Classical Studies 227S. 3 units. *Cormack*

**233S. Topics in Early Christian and Byzantine Art.** Specific conceptual, institutional, or formal problems in the art of the late antique world or of the east Roman Empire. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 233S. C-L: Classical Studies 230S, Medieval and Renaissance Studies, and Religion 275S. 3 units. *Wharton*

**236S. Topics in Romanesque and Gothic Art and Architecture.** Analysis of an individual topic. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 236S. C-L: Medieval and Renaissance Studies. 3 units. *Bruzelius*

**237S. Greek Painting.** Not open to students who have taken Art 237S. See C-L: Classical Studies 232S. 3 units. *Stanley*

**238S. Greek Sculpture.** Not open to students who have taken Art 238S. See C-L: Classical Studies 231S. 3 units. *Younger*

**241-242. History of Netherlandish Art and Visual Culture in a European Context.** A contextual study of visual culture in the Greater Netherlands and its underlying historical and socioeconomic assumptions from the late medieval to early modern period, through immediate contact with urban cultures, such as Amsterdam, Leiden, Utrecht, Brussels, Ghent, Bruges, and Antwerp. Includes daily visits to major museums, buildings, and sites; hands-on research in various collections; discussion sessions with leading scholars in the field; and a critical introduction to various research strategies. (Taught in the Netherlands.) Not open to students who have taken Art 158-159 or Art 241-242. 6 units. *Van Miegroet*

**243S. Topics in Netherlandish and German Art.** Specific problems in northern Renaissance or baroque art such as the Antwerp workshops of the sixteenth century or a critical introduction to major artists such as Van Eyck, Bosch, Dürer, and Rubens. An analytical approach to their lives, methods, atelier procedures and followers; drawings and connoisseurship problems; cultural, literary, social, and economic context; documentary and scientific research strategies. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 243S. C-L: Medieval and Renaissance Studies. 3 units. *Van Miegroet*

**244A, S. International Expressionism.** A synchronic view of the expressionist revolution in modern aesthetic conceptions throughout Europe in the period 1905-1925, emphasizing fusions of established aesthetic modes with new technological media, and the opening up of the Western tradition to other cultures, especially African. German expressionism forms the nucleus of the course and its study is integrated with the theory and practice of Italian futurism, Anglo-American imagism and vorticism, French surrealism, and Russian rayonnism. Not open to students who have taken Art 244A, Art 244S, or German 244S. C-L: German 244A. 3 units. *Cernuschi and Rolleston*

**244B, S. International Modernism.** An interdisciplinary view of the various aesthetic and literary manifestations of European modernism: cubism, imagism, futurism,

vorticism, suprematism, constructivism, dadaism, expressionism, and surrealism. Not open to students who have taken Art 244B. C-L: German 244B. 3 units. *Cernuschi and Rolleston*

**247S. Topics in Italian Renaissance Art.** Specific problems dealing with iconography, style, or an individual master from c. 1300 to 1600. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 247S. C-L: Medieval and Renaissance Studies. 3 units. *Rice*

**257S. Topics in Pre-Columbian Art and Culture.** Selected topics in pre-Columbian art and archaeology with an emphasis on the political and cultural context of the artifact. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 257S. 3 units. *Reents-Budet*

**260S. Topics in Italian Baroque Art.** Problems in Italian art and architecture from c. 1580 to c. 1750. Topics vary from year to year. Consent of instructor required. Not open to students who have taken Art 260S. C-L: Medieval and Renaissance Studies. 3 units. *Rice*

**265S. Topics in Nineteenth-Century Art.** Focus on a major artist, movement, or trend in nineteenth-century art. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 265S. 3 units. *Cernuschi or Stiles*

**270S. Topics in African Art.** Specific problems of iconography, style, or a particular art tradition. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 270S. C-L: African and Afro-American Studies 270S. 3 units. *Powell*

**271S. Topics in Art of the United States.** Selected topics from colonial times to 1945, with emphasis on major cultural issues, movements, works, and/or artists. Consent of instructor required. Not open to students who have taken Art 271S. 3 units. *Powell or Stiles*

**272S. Topics in Chinese Art.** Problems and issues in a specific period or genre of Chinese art. Specific focus varies from year to year. Not open to students who have taken Art 272S. 3 units. *Abe*

**283S. Topics in Modern Art.** Selected themes in modern art before 1945, with emphasis on major movements or masters. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 283S. 3 units. *Cernuschi or Stiles*

**291, 292. Independent Study/Special Problems in Art History.** Directed reading and research. Consent of instructor required. Not open to students who have taken Art 291, 292. 3 units each. *Staff*

**296S. Methodology of Art History.** Approaches to the study and theory of art: historiography, connoisseurship, iconology, and criticism. Consent of instructor required. Not open to students who have taken Art 296S. 3 units. *Staff*

**297S. Topics in Art since 1945.** Historical and critical principles applied to present-day artists and/or movements in all media since World War II. Consent of instructor required. Not open to students who have taken Art 297S. 3 units. *Cernuschi or Stiles*

**298S. Topics in Modern and Postmodern Architecture.** The study of particular architects, movements, or building genres in their conceptual and political contexts. Subject varies from year to year. Consent of instructor required. Not open to students who have taken Art 298S. 3 units. *Wharton*



**299S. Critical Theory.** Understanding of the visual arts in terms of the theoretical developments in other disciplines (for example, literature, women's studies, Marxism, and anthropology). Focus on the writings of theory-centered art historians and critics. Consent of instructor required. Not open to students who have taken Art 299S. 3 units. *Cernuschi, Stiles, or Wharton*

#### **For Graduates**

**300. Pedagogy in Art History.** Instruction and practice in the teaching of art history. Credit/no credit grading only. No credit. *Staff*

**301. Museum Studies.** Introduction to the organization and functions of the museum in preparation for the presentation of a student-organized exhibition. Most of the semester spent in independent study researching scholarly, critical essays for the catalog. 3 units. *Mezzatesta*

**302. Museum Studies.** Completion of research and preparation of the catalog. Students actively participate in catalog design and production, and will be responsible for planning and installing the exhibition as well as interpreting it to the public through lectures and tours. 3 units. *Mezzatesta*

**375. Landscape and Memory in the Later Middle Ages.** A series of studies involving evidence both visual and verbal that reconstruct and assess the nature and significance of the *mis-en-scene* of late medieval life in both the country and the city. Topics include planning traditions, public monuments and public works, streets and thoroughfares, gardens and agriculture, and range from the medieval West to the Byzantine and Muslim worlds. 3 units. *Tronzo*

**380. Mercantile and Visual Culture in Early Modern Europe.** New research that negotiates various possibilities in reuniting ideas, theories, and reception codes, different from those we currently identify. Various scenarios generated will focus on unexpected interplays between images and audiences within their local, timely, and particular socioeconomic frame. 3 units. *Van Miegroet*

**381. Space of Illusion.** Consideration of architectures of play, escape, and healing. History and physical form of sites from antiquity to the present (for example, the Roman and Byzantine spa at Hieropolis, the pilgrimage shrine at Lourdes, Disney World) studied through primary sources and theoretical texts. 3 units. *Wharton*

**383. Bodies and Texts.** Artists' theoretical writings and actions in a contemporary international, social, historical, and cultural context. Topics include the intersection between literary and performative works; responses globally to destruction and age; conditions of gender, sexuality, race, and nation as they shape subjectivity; and the semiotic structure of the visual arts. Media include experimental forms ranging from conceptual and performance art to process and site-specific installation, photography, video, and new electronic technologies. 3 units. *Stiles*

**387. Art History and Representation.** Seminar in the production of art history through various forms of representation, broadly construed, with special attention to issues of aesthetics, social context, historical location, and enunciative position. Consideration of practices of collecting, translation, display, and knowledge formation in order to explore the heterogeneous genealogy of art history. 3 units. *Abe*

**391, 392. Individual Research in Art History.** Directed research and writing in areas unrepresented by regular course offerings. Consent of instructor required. 3 units each. *Staff*

**393. Colloquium in the History of Art.** Topics of interest to art historians in every field, including "The Question of Originality," "Implications of the Frame (or its

absence), " and "Art and Economy: The Impact of the Market on Visual Production." Faculty and students participate in the forum. Consent of instructor required. 3 units. *Staff*

**394. Graduate Symposium.** Graduate students deliver major research papers to their peers, faculty, and interested visitors. A one-day event organized by participating graduate students, supervised by a student-faculty committee, and scheduled annually sometime in April. Consent of instructor required. 3 units. *Staff*

**395. Topics in Art History.** In-depth consideration of a specific art historical problem of a formal, historical, or conceptual nature. 3 units. *Staff*

## COURSES CURRENTLY UNSCHEDULED

205S. Greek Architecture

206S. Roman Architecture

227S. Roman Painting

## Asian and African Languages and Literature

Professor Cooke, *Director*; Associate Professor Wang; Associate Professor of the Practice Khanna; Assistant Professors Ching, Yoda, and Zakim; Assistant Professors of the Practice Cornell, Endo, and Lee; Instructors Shah and Yanagida; Lecturers Son-Yar-brough and Yao-Lahusen. *Affiliated faculty*: Professor Lawrence (religion)

Courses in the following languages are taught currently and regularly in Asian and African Languages and Literature: Arabic, Chinese, modern Hebrew, Hindi, Japanese, Korean, and Swahili. In addition, courses in Persian are taught on an irregular basis. Some of the literature courses are taught in English translation.

The curriculum in Asian and African Languages and Literature (AALL) is based on intellectual perspectives that examine contemporary national and ethnic cultures of Asia and Africa within a global context. The mission of AALL is twofold: to equip students with advanced language proficiency in preparation for academic or career goals, and secondly, to foster a view of literature and culture at once indigenous and global, informed by local histories of internal development as well as by theories of cross-cultural influence. AALL has a faculty of fourteen whose interests range from language pedagogy to film, modernism, war and gender, colonialism and postcolonialism, and popular culture.

AALL's core courses and literature courses address such diverse topics as self and others, popular culture, rethinking the sixties, psychoanalysis and culture, war and women's literature, and the cultural politics of censorship.

For a detailed listing of full course offerings, see the Asian and African Languages and Literature section in the *Bulletin of Duke University: Undergraduate Instruction*.

## ASIAN AND AFRICAN LANGUAGES AND LITERATURE

**200S. Seminar in Asian and African Cultural Studies.** Concentration on a theoretical problem or set of issues germane to the study of Asian and African cultures. C-L: Cultural Anthropology 288S and Literature 200S. 3 units. *Ching*

**205. Asian and African Languages and Literature.** Graduate credit for a course in any of the following languages: Arabic, Chinese, Hebrew, Hindi, Korean, Persian, Swahili. C-L: African and Afro-American Studies 200. 3 units. *Staff*

**259. The Bestseller: Cultural Populism in the 1990s' China.** The bestseller culture industry in post-Mao China. Topics include the classification of the high, low, and middle brow cultures of the bestseller, the publishing industry's response to the issues

of subcultures, consumerism, and the post-Mao social imaginary, the consumption of politics, and tabooed subjects. C-L: Cultural Anthropology 263 and Literature 279. 3 units. *Wang*

### **Courses Currently Unscheduled**

**203S. Gender and War**

### **HINDI**

### **Courses Currently Unscheduled**

**200, 201. Special Studies in South Asian Languages**

### **JAPANESE**

**205S, 206S. Seminar in Japanese.** Topics vary each semester. Prerequisite: Japanese 184 or equivalent. 3 units each. *Yoda*

**291. Research Methods in Japanese.** Introduction to various research approaches to literary, sociological, and historical studies of Japan. Emphasis on bibliographical sources that best serve needs in chosen area of specialization. Consent of instructor required. C-L: Cultural Anthropology 290, History 292, Political Science 291, and Sociology 291. 3 units. *Staff*

## **Asian/Pacific Studies Institute**

Nan Lin, Ph.D., *Director*

The institute sponsors an agenda of visiting speakers and scholars and coordinates study abroad programs in China and Japan. A limited number of fellowships are granted which provide stipends for a two-year period. Incoming graduate students with the Ph.D. as their objective, students in good standing in the first year of study in Duke professional schools, and current Duke students enrolled in Ph.D. programs may be considered for these fellowships. Additional one-year fellowships are available. Further information may be obtained from the Asian/Pacific Studies Institute, 2111 Campus Drive, Box 90411, Duke University, Durham, North Carolina 27708-0411.

## **Biochemistry**

Professor Raetz, *Chair* (255 Nanaline H. Duke); Professor Greenleaf, *Director of Graduate Studies* (138 Nanaline H. Duke); Professors Bennett, Blackshear, Fridovich, Greenleaf, Hill, Hsieh, Kredich, Lefkowitz, Modrich, Rajagopalan, D. Richardson, J. Richardson, Siegel, Spicer, Steege, and Webster; Associate Professors Been, Casey, Fierke, Greene, B. Kaufman, R. Kaufman, and Sage; Assistant Professors Beese, Garrett, Hellinga, Hershfield, R. Kaufman, and Oas; Professors Emeriti Bernheim, Gross, Guild, and McCarty; Adjunct Professor Bell

Graduate work in the Department of Biochemistry is offered leading to the Ph.D. degree. Preparation for such graduate study may take diverse forms. Undergraduate majors in chemistry, biology, mathematics, or physics are welcome, but adequate preparation in chemistry is essential. Graduate specialization areas include protein structure and function, crystallography and NMR of macromolecules, nucleic acid structure and function, lipid biochemistry, membrane structure and function, molecular genetics, and enzyme mechanisms. The recommended core requirements consist of courses 259 and 268 (or equivalent training) and additional courses in the area of specialization. The biochemistry department, in cooperation with the University Programs in Genetics, Cell and Molecular Biology, Molecular Biophysics, and Biological Chemistry, offers biochem-



istry students the opportunity to pursue advanced research and study to fulfill the requirements for the Ph.D. degree related to these fields.

**200. General Biochemistry.** An introductory survey of fundamental aspects of biochemistry with emphasis on the structure of macromolecules, mechanism of enzyme action, metabolic pathways, biochemical genetics, and the structure and functions of special tissues. Designed for medical students; graduate students only with consent of instructor. 4 units. *Staff*

**209, 210. Independent Study.** A tutorial designed for students who are interested in either a laboratory or a library project in biochemistry. Credit to be arranged. C-L: Marine Sciences. Variable credit. *Staff*

**222. Structure of Biological Macromolecules.** Introduction to the techniques of structure determination by X-ray crystallography and study of some biological macromolecules whose three-dimensional structures have been determined at high resolution. C-L: Molecular Biophysics 222. 2 units. *Richardson*

**227. Introductory Biochemistry I: Intermediary Metabolism.** Chemistry of the constituents of proteins, lipids, carbohydrates, and nucleic acids and their metabolic interrelationships. Prerequisite: organic chemistry. 3 units. *Hill and staff*

**228. Introductory Biochemistry II.** Structure, function, and biosynthesis of biological macromolecules and regulation of their synthesis. Intermediary metabolism and metabolic utilization of energy. Biochemistry of biological membranes, receptors, and signal transduction via membrane receptors. Prerequisites: organic chemistry and Biochemistry 227. 3 units. *Webster and staff*

**259. Molecular Biology I: Proteins and Enzymes.** Detailed concepts of the structure and function of proteins as enzymes and as structural elements of cellular substructures, including: protein primary structure and its determination, patterns of protein folding, mechanisms of enzyme catalysis and regulation, function and formation of multimeric protein assemblies, kinetics of enzyme reactions. Prerequisites: biochemistry, organic chemistry, and physical chemistry. C-L: Cell Biology 259, Immunology 259, Microbiology 259, and Molecular Biophysics 259. 3 units. *Fierke and staff*

**265S, 266S. Seminar.** Topics and instructors announced each semester. 2 units or variable. Variable credit. *Staff*

**268. Molecular Biology II: Nucleic Acids.** Biochemistry of nucleic acids, with emphasis on their chemistry, structure, metabolism, and biological function in information transfer. Prerequisites: introductory biochemistry and equivalents of Biochemistry 259 and Cell and Molecular Biology 247, 277, and 278. C-L: Cell Biology 268, Immunology 268, Microbiology 268, and The University Program in Genetics 268. 4 units. *Steege and staff*

**291. Physical Biochemistry.** Basic principles of physical chemistry as applied to biological systems. Topics include thermodynamics, kinetics, statistical mechanics, spectroscopy, and diffraction theory. Concepts discussed in the context of the biochemistry and behavior of biological macromolecules. Emphasis on quantitative understanding of biochemical phenomena, with extensive problem solving as an instructive tool. Prerequisites: undergraduate physical chemistry and one year of calculus. C-L: Molecular Biophysics 291. 3 units. *Oas and staff*

**345, 346. Biochemistry Seminar.** Required of all second- and third-year biochemistry students. Credit/no credit grading only. 1 unit each. *Staff*

**417. Cellular Signaling.** See C-L: Cell Biology 417; also C-L: Pharmacology 417. 3 units. *Bell, Caron, Casey, Means, and invited lecturers*

# Biological Anthropology and Anatomy

Professor Kay, *Chair* (267 Sands); Associate Professor Smith, *Director of Graduate Studies* (270 Sands); Professors Cartmill, Glander, Hylander, Simons, Terborgh, and Van Schaik; Associate Professor Roth; Assistant Professors Bassett, Churchill, Maas, Pope, and White; Associate Professor Emeritus Duke; Adjunct Associate Professor Wright

Admission to the Ph.D. program in biological anthropology and anatomy is not contingent on any particular course of study at the undergraduate level. The goal of the graduate program is to provide students with a broad-based background in organismal biology with which to study the behavior, ecology, and evolution of primates. The three general areas of specialization in the department are: (1) behavior, ecology, and genetics; (2) paleontology, systematics, and evolution; and (3) functional, comparative, and developmental morphology. Students are encouraged to define a course of study that crosses these boundaries and that extends beyond the strict limits of primatology. Research opportunities include behavioral research at the Duke University Primate Center; ecological and behavioral fieldwork in Africa, South America, Asia, and Madagascar; paleontological fieldwork in Africa, South America, North America, and Madagascar; and laboratories in experimental functional morphology and comparative embryology.

Courses of study are tailored to meet individual needs, but all students will be expected to take gross human anatomy, a course in statistics and experimental design, and at least one course in each of the subfields of the department. Students are required to demonstrate a reading knowledge of at least one language other than English.

**238S. Functional and Evolutionary Morphology of Primates.** History and functional significance of locomotor and feeding adaptations, craniofacial morphology, sense organs, and reproductive systems in primates, including *Homo sapiens*. Consent of instructor required. Prerequisites: Biological Anthropology and Anatomy 172L or equivalent. 3 units. *Cartmill, Kay, or staff*

**244L, S. Comparative Primate Ecology.** Comparisons of the evolutionary ecology of prosimians, monkeys, and apes. With field methods. Prerequisites: Biological Anthropology and Anatomy 93 and 143 recommended. 3 units. *Glander or White*

**245S. Primate Social Evolution.** Ecological determinants of, and biological constraints on, social strategies and systems. Emphasis on primates. Prerequisites: Biological Anthropology and Anatomy 93; 143, 144L, or 146; or consent of instructor. 3 units. *Van Schaik*

**246. The Primate Fossil Record.** A survey of fossil primates including early humans. The diversity, anatomy, and behavior of primates as related to the origin and spread of past primates. The radiation of each main group of primates in the succession leading to humans illustrated with slides, casts, and fossils. Topics include geochemical dating, timing of molecular clocks, and various procedures for classifying primates. Prerequisites: Biological Anthropology and Anatomy 93 or consent of instructor. 3 units. *Simons*

**247. The Hominid Fossil Record.** Origin and successive stages of development of human ancestors. Detailed analysis of adaptive types and cultural developments. Personalities and current controversies in the study of hominid paleontology. Prerequisites: Biological Anthropology and Anatomy 93, 132, or consent of instructor. 3 units. *Simons*

**248S. Evolution of Mammals.** The origin, adaptive radiation, and phylogenetic relationships of mammals, as inferred from the fossil record. Consent of instructor required. 3 units. *Maas*



**249S. Microevolution and Sociobiology.** The relationship between resource distribution, social structure, and rate and direction of evolutionary change, including speciation. Mating systems, dispersal patterns, and mechanisms of new social group formation examined from the perspective of their effects on the genetic structure of populations and species radiations. Prerequisites: Biological Anthropology and Anatomy 93, or Biology 21L/25L; BAA 143 or 146 recommended. 3 units. *Pope*

**250. Biometry.** A practically oriented overview of the statistical analysis of biological data. Topics include data collection and experimental design, methods and techniques of data organization, use of computing programs and packages, applications of appropriate parametric and nonparametric statistical techniques, assumptions and problems encountered with biological data analysis, and interpretation of results. Prerequisites: Mathematics 136, Psychology 117, Sociology 133, Statistics 10D, 110, 112, 114, 213, or equivalent, and consent of instructor required. 3 units. *White*

**280L, 281L. Special Topics Laboratory.** Special topics in methodology, theory, or area. Consent of instructor required. 3 units each. *Staff*

**280S, 281S. Seminar in Selected Topics.** Special topics in methodology, theory, or area. Consent of instructor required. 3 units each. *Staff*

**287S. Macroevolution.** Evolutionary patterns and processes at and above the species level; species concepts, speciation, diversification, extinction, ontogeny and phylogeny, rates of evolution, and alternative explanations for adaptation and evolutionary trends. Prerequisite: Biology 25L or equivalent. C-L: Botany 287S and Zoology 287S. 3 units. *Roth*

**289L. Comparative Mammalian Anatomy.** A practical survey of anatomical diversity in mammals. An emphasis on dissections of a broad variety of mammals. A broader perspective on specific anatomical features provided in the lectures. 3 units. *Staff*

**290. Pattern and Process in Vertebrate Development.** Research results on developmental processes applied to classic problems of comparative vertebrate biology. Specific focus to vary, but to include cell differentiation and migration, induction, cell-cell interaction and cell mechanics as well as craniofacial morphogenesis, development and evolution, developmental constraints and comparative embryology. Prerequisites: course in comparative or human anatomy and consent of instructor. C-L: Zoology 290. 3 units. *Smith*

**292S. Topics in Morphology and Evolution.** Various aspects of vertebrate morphology and evolution, including major historical approaches to the interpretation of morphology; the evolution, development, and function of specific morphological structures; and patterns of vertebrate evolution. Consent of instructor required. 3 units. *Smith*

**301. Anatomy of the Limbs.** The musculoskeletal anatomy of the limbs and limb girdles. Emphasis is on detailed dissection of the extremities, with a minor focus on clinical applications. Course primarily intended for advanced graduate students in physical therapy. Consent of instructor required. 1 to 3 units. Variable credit. *Staff*

**305. Gross Human Anatomy.** Includes complete dissection of a cadaver; laboratory work is supplemented by conferences which emphasize biological and evolutionary aspects. Required of entering graduate students in anatomy; by arrangement, may extend into second semester. Prerequisites: adequate background in biology, including comparative anatomy and embryology and written consent of instructor. 3 units. *Staff*

**312. Research.** Individual investigations in the various fields of biological anthropology and anatomy. Consent of instructor required. Credit to be arranged; maximum 6 units. Variable credit. *Staff*



**313. Anatomy Seminar.** Regular meeting of graduate students and staff in which current research problems in anatomy will be presented. 1 unit. *Staff*

**314. Biological Anthropology Seminar.** Regular meeting of graduate students and staff in which current research problems in biological anthropology will be presented. 1 unit. *Staff*

**334. Topics in Physical Anthropology.** 3 units. *Staff*

**340. Tutorial in Advanced Anatomy.** Topics for intensive reading and discussion will be chosen according to the student's interests, related to basic problems in function of bone and muscle systems, development and differentiation, comparative anatomy at the gross and histological level and vertebrate evolution. Consent of instructor required. Variable credit. *Staff*

**354. Research in Biological Anthropology and Anatomy.** A preceptorial course in various research methods in biological anthropology and anatomy. Consent of instructor required. Credit to be arranged. Variable credit. *Staff*

**393. Independent Study.** Directed reading and research. Consent of instructor required. 3 units. *Staff*

#### COURSES CURRENTLY UNSCHEDULED

**293, 294. Evolutionary Theory**

## University Program in Biological Chemistry

Michael C. Pirrung, Ph.D., *Director of Graduate Studies*

The University Program in Biological Chemistry is designed to provide training to students in synthetic and mechanistic aspects of the interface between chemistry and biology. Specializations include carbohydrate, lipid, nucleic acid, and protein synthesis; molecular recognition between biomolecules; and mechanisms of catalytic processes involving proteins and nucleic acids and their associated cofactors. Course offerings, including a core focusing on the synthesis of biological macromolecules and mechanisms of enzymatic cofactors, are aimed at providing significant cross-training between chemistry and biology and developing a common language among students in different disciplines. Intensive laboratory rotations begin in the summer and continue in the fall and (in some cases) spring semesters of the first year of study. The research laboratories of program faculty are well-funded and use state-of-the-art equipment for magnetic resonance, mass spectrometry, and computer graphics, among others.

The program offers a certificate of graduate studies, with the doctoral degree awarded by one of the three degree-granting departments. Prospective students may apply directly to the program or to one of the degree-granting departments (Chemistry, Biochemistry, Botany). Students admitted to the University Program in Biological Chemistry have up to one year to affiliate with a degree program. For more information contact the Director of Graduate Studies, University Program in Biological Chemistry, Duke University, Box 3567 DUMC, Durham, NC 27710.

## Botany

Professor Searles, *Chair* (149 Biological Sciences); Associate Professor Vilgalys, *Director of Graduate Studies* (134 Biological Sciences); Professors Antonovics, Barber, Boynton, Christensen, Ramus, Reynolds, Schlesinger, Siedow, Stone, Strain, Terborgh, White, and Wilbur; Associate Professors Knoerr, Kohorn, and Shaw; Assistant Professors Clark, Dong, Honma, Manos, and Sun; Professors Emeriti Anderson, Billings, W. Culbertson, and Naylor; Research Professor C. Culbertson; Associate Research Professor Harris;

Adjunct Professors Rogers and Swofford; Adjunct Associate Professors Funk, Kress, Lacey, Wagner, and Zimmer; Assistant Professors of the Practice Armaleo and Bush

Graduate work in the Department of Botany is offered leading to the A.M. (nonthesis), M.S. (thesis), and Ph.D. degrees, although applicants declaring terminal master's objectives are not admitted to the program. Students entering the graduate program in botany normally have a broad background in the botanical or biological sciences supplemented with basic courses in chemistry, mathematics, and physics. Biochemistry and physical chemistry are strongly recommended for students interested in molecular areas, and advanced courses in mathematics are recommended for students in population genetics and ecology. Deficiencies may be corrected by taking appropriate courses during the first year of graduate study. Students in botany may specialize in a wide variety of areas including anatomy; cellular and molecular biology; evolution; developmental, ecological, molecular, organelle, and population genetics; physiology; community, ecosystem, physiological, and population ecology; marine biology; and the systematics of algae, fungi, lichens, bryophytes, ferns, and flowering plants. Students' programs are tailored to individual needs. A brochure providing detailed information on the botany department is available from the director of graduate studies.

**212L, S. Phycology.** Morphological and ecological characteristics of common freshwater and marine algae and principles of their classification. 3 units. *Searles*

**215. Tropical Ecology.** Ecosystem, community, and population ecology of tropical plants and animals with application to conservation and sustainable development. Prerequisite: a course in general ecology. C-L: Environment 217 and Zoology 215. 3 units. *Terborgh*

**218L. Barrier Island Ecology.** An integration of barrier island plant and animal ecology within the context of geomorphological change and human disturbance. Topics include: barrier island formation and migration, plant and animal adaptations, species interactions, dune succession, maritime forests, salt marshes, sea level rise, conservation policy, and restoration ecology. Field trips to many of the major North Carolina barrier islands. Strong emphasis on field observation and independent research. (Given at Beaufort.) Prerequisite: Biology 25L or equivalent; suggested: course in botany or ecology. C-L: Environment 218L and Marine Sciences. 6 units. *Evans, Peterson, and Wells (visiting summer faculty)*

**220L. Mycology.** Survey of the major groups of fungi with emphasis on life history and systematics. Field and laboratory exercises. 3 units. *Vilgalys*

**224T, 225T. Special Problems.** Students with adequate training may do special work in the fields listed below. Credit to be arranged. 1 to 4 units. Variable credit.

2. Genetics. *Antonovics*
3. Genetics. *Boynton*
4. Ecology. *Christensen*
5. Ecology. *Clark*
6. Lichenology. *W. Culberson*
13. Cell Biology. *Kohorn*
18. Bryology and Systematics. *Shaw*
24. Phycology. *Ramus*
29. Ecology. *Schlesinger*
30. Phycology. *Searles*
31. Physiology. *Siedow*
33. Systematics of Flowering Plants. *Stone*
34. Ecology. *Strain*
38. Mycology and Molecular Systematics. *Vilgalys*
42. Anatomy and Morphology of Vascular Plants. *White*
44. Systematics of Vascular Plants. *Wilbur*
53. Tropical Ecology and Conservation. *Terborgh*
54. Marine Ecology. *Barber*
55. Ecology. *Reynolds*
57. Systematic Botany. *Manos*

58. Plant Molecular Biology. *Dong*  
60. Plant Molecular Biology. *Sun*  
66. Ecology. *Bush*  
67. Cell Biology. *Honma*

**229L. S. Paleoecology.** Global change over the last two million years. Prerequisites: two semesters of biology or geology; and one semester each of calculus, chemistry, and physics; or consent of instructors. C-L: Zoology 229L. 3 units. *Bush, Clark, and Livingstone*

**232. Microclimatology.** See C-L: Environment 232. 3 units. *Knoerr*

**234S. Problems in the Philosophy of Biology.** Consent of instructor required. See C-L: Philosophy 234S; also C-L: Zoology 234S. 3 units. *Brandon*

**237L. Systematic Biology.** Theory and practice of identification, species discovery, phylogeny reconstruction, classification, and nomenclature. Prerequisite: Biology 25L or equivalent. C-L: Zoology 237L. 3 units. *Manos, Swofford, and Vilgalys*

**241. Field Botany.** Identification and recognition of the vascular flora of the Carolinas. Frequent field trips to representative habitats. Prerequisite: introductory plant identification course or consent of instructor. 3 units. *Wilbur*

**243L. Evolution and Classification of Angiosperms.** Characteristics and phylogenetic relationships of major flowering plant lineages. Emphasis on current literature, rigorous methods, modern controversies, and biological and biogeographic implications of relationships. Prerequisite: Biology 142L or equivalent. 3 units. *Funk, Kress, and Manos*

**256L, S. Plant Biosystematics.** Descriptive and experimental procedures used to assess systematic implications of plant evolution. Laboratory, discussion, and field-oriented problems. Prerequisites: basic courses in systematics and genetics. 3 units. *Manos*

**257L. Molecular Systematics and Evolution.** Descriptive and experimental procedures used to assess evolutionary diversity for analysis of population genetics and systematic relationships. Laboratory problems, discussion, and individual research projects. Prerequisites: basic course work in systematics, evolution, and genetics. 3 units. *Vilgalys*

**261. Photosynthesis.** Principles of photosynthesis: developmental, mechanistic, regulatory, and ecological aspects of the photosynthetic process. Prerequisite: Biology 152 or Botany 252 or equivalent. 3 units. *Siedow*

**265L. Physiological Plant Ecology.** The physiological approach to interpreting adaptation in plants, with emphasis on terrestrial seed plants. Prerequisites: Biology 110L and 152 or equivalents. 3 units. *Strain*

**267L. Community Ecology.** Mechanisms that determine the distribution and abundance of plants and animals: geology, climate, physiography, soils, competition, predation, and history. Lectures focus on ecological principles. Seminars and weekend field trips. Prerequisites: an introductory ecology course and consent of instructor. C-L: Zoology 267L. 3 units. *Clark*

**269. Advanced Cell Biology.** Prerequisite: introductory cell biology or consent of instructor. See C-L: Zoology 269; also C-L: Cell Biology 269 and Immunology 269. 3 units. *Siedow and staff*

**272. Biogeochemistry.** Processes controlling the circulation of carbon and biochemical elements in natural ecosystems and at the global level, with emphasis on soil and surficial processes. Prerequisite: Chemistry 12L or equivalent. C-L: Geology 272. 3 units. *Schlesinger*



**283. Molecular Genetics of Organelles.** Genetics, biochemistry, and molecular biology of the organelles of eukaryotic cells, and cellular symbionts. Emphasis on recent literature. Prerequisite: introductory genetics. C-L: The University Program in Genetics 283 and Zoology 283. 3 units. *Boynton and Gillham (zoology)*

**285S. Ecological Genetics.** Interaction of genetics and ecology and its importance in explaining the evolution, diversity, and distribution of plants and animals. Prerequisites: Biology 120 and consent of instructor. C-L: The University Program in Genetics. 3 units. *Antonovics*

**286. Evolutionary Mechanisms.** Population ecology and population genetics of plants and animals. Fitness concepts, life history evolution, mating systems, genetic divergence, and causes and maintenance of genetic diversity. Prerequisites: Biology 25L and 120 or equivalents. C-L: The University Program in Genetics 286 and Zoology 286. 3 units. *Antonovics, Rausher, and Uyenoyama (zoology)*

**287S. Macroevolution.** Evolutionary patterns and processes at and above the species level; species concepts, speciation, diversification, extinction, ontogeny and phylogeny, rates of evolution, and alternative explanations for adaptation and evolutionary trends. Prerequisite: Biology 25L or equivalent. C-L: Biological Anthropology and Anatomy 287S and Zoology 287S. 3 units. *Roth (zoology)*

**295S, 296S. Seminar.** Credit to be arranged. Variable credit. *Staff*

**300. Tropical Biology: An Ecological Approach.** Highly intensive, field-oriented course conducted in Costa Rica under auspices of the Organization for Tropical Studies. For additional information refer to the chapter "Special and Cooperative Programs." 6 to 8 units. Variable credit. *Staff*

**303. Principles of Ecological Modeling.** Design, implementation, analysis, and interpretation of ecological models. Combination of lectures, student-moderated discussions, and computer lab exercises. Prerequisites: Biology 110L or equivalent and Environment 251 or equivalent. C-L: Environment 303. 3 units. *Reynolds and Urban*

**305S, 306S. Plant Systematics Seminar.** Weekly presentation of current research in plant systematics by students, faculty, and invited speakers. 1 unit each. *Vilgalys*

**310S, 311S. Plant Ecology Seminar.** Discussion of current research and literature. 1 unit each. *Staff*

**315S, 316S. Population Genetics Seminar.** Discussion of recent developments in population genetics. Topics include population dynamics, forces affecting gene frequency change, molecular evolution, philosophy of evolutionary biology. Student presentations are integral to the course. 1 unit each. *Antonovics*

**320S, 321S. Systematics Discussion Group.** An informal discussion group. Topics vary from semester to semester; cover systematic and evolutionary biology in the broad sense. 1 unit each. *Staff*

**325S, 326S. Developmental, Cellular, and Molecular Biology Seminar.** Weekly presentations in developmental, cellular, and molecular biology topics by students, faculty, and invited speakers. Consent of instructor required. 1 unit each. *Staff*

**330L. Environmental Monitoring and Instrumentation.** Methods of measuring and monitoring the earth's physical environment with emphasis on water and air resources. Characteristics and uses of contemporary sensors, measurement and data acquisition systems. Methods of obtaining and processing computer compatible data records. Includes laboratory. Offered on demand. C-L: Environment 330L. 4 units. *Knoerr*

**359, 360. Research in Botany.** Individual investigation in the various fields of botany. Credit to be arranged. C-L: Marine Sciences. Variable credit. *All members of the graduate staff*

**399. Special Readings.** Directed readings in advanced topics. Consent of instructor required. Credit to be arranged. Variable credit. *All members of the graduate staff*

## COURSES CURRENTLY UNSCHEDULED

**247L. Plant Ecology**

**344. Micrometeorology and Biometeorology Seminar**

## RELATED PROGRAMS

**The University Program in Cell and Molecular Biology.** Cell and molecular biology courses offered by the botany department are an integral part of this interdepartmental program. Refer to the announcement in this bulletin under Cell and Molecular Biology for descriptions of the following courses: 259. Molecular Biology I: Proteins and Enzymes, and 264. Cell and Molecular Biology Seminar.

**The University Program in Genetics.** Genetics courses offered by the botany department are an integral part of this interdepartmental program. Refer to the announcement in this bulletin under the University Program in Genetics for more information.

**The University Program in Marine Sciences.** Interdisciplinary programs emphasizing marine botany are available. Refer to the section on the University Program in Marine Sciences.

**Program in Integrative Biology.** This interdisciplinary program provides selected graduate students with an academic and research environment in which they are encouraged to think broadly and synthetically about problems in biology.

**Program in Tropical Biology.** Fellowships are available for travel and subsistence in field-oriented programs in Central America. Refer to the section on Organization for Tropical Studies in the chapter "Special and Cooperative Programs."

## Business Administration

Rex Adams, *Dean* (219W Fuqua School of Business); Professor Bettman, *Director of Graduate Studies* (429E Fuqua School of Business); Professors R. Ashton, Baligh, Bradley, Burton, Clemen, DeSanctis, Fischer, Forsyth, Hsieh, Huber, Hughes, Keller, Laughhunn, Lewin, Magat, McCann, Payne, Sheppard, Staelin, Whaley, Winkler, and Zipkin; Associate Professors Anton, A. Ashton, Bansal, Boulding, Edell, Harvey, Johnson, Kouvelis, Kyle, Linville, Maines, Mazzola, McCardle, M. Moore, M. C. Moore, Nau, Sitkin, J. Smith, Viswanathan, and Wallace; Assistant Professors Belliveau, Brodt, Cachon, Carmon, Friedman, Gray, Henderson, Huddart, Lariviere, Lemon, Li, Ndilikilikisha, Vettas, Wang, and Wertenbroch; Professor Emeritus Cohen; Research Professors Breeden and Dumas

The Ph.D. in business administration program prepares candidates for research and teaching careers at leading educational institutions and for careers in business and governmental organizations where advanced research and analytical capabilities are required. The Ph.D. program places major emphasis on independent inquiry, on the development of competence in research methodology, and on the communication of research results. The school offers programs of research and training in the areas of accounting, decision sciences, finance, management, marketing, and operations management. The student and the faculty in his/her area determine the specific program of

study. Each student takes a comprehensive examination at the end of the second year or at the beginning of the third year of residence. The final requirement is the presentation of a dissertation. The Ph.D. program usually requires four to five years of work. Refer to the *Bulletin of Duke University: The Fuqua School of Business* for a complete list of courses and course descriptions.

**510. Bayesian Inference and Decision.** Methods of Bayesian inference and statistical decision theory, with emphasis on the general approach of modeling inferential and decision-making problems as well as the development of specific procedures for certain classes of problems. Topics include subjective probability, Bayesian inference and prediction, natural-conjugate families of distributions, Bayesian analysis for various processes, Bayesian estimation and hypothesis testing, comparisons with classical methods, decision-making criteria, utility theory, value of information, and sequential decision making. C-L: Statistics 221. 3 units. *Winkler*

**513. Choice Theory.** This seminar deals with the topics of measurement theory, conjoint measurement, expected utility and subjective expected utility theory, multiattribute utility theory and recent advances in preference modeling (generalized nonlinear utility theories). The goal of this seminar is to equip students with tools so that they can use preference modeling in a wide variety of social science applications. C-L: Statistics 234. 3 units. *Staff*

**521. Organization Seminar: A Micro Focus.** Individual and small group behavior in organizations. Theories of motivation, decision making, interpersonal behavior, group processes, and leadership. A variety of research approaches and methods includes presentation of behavioral research by members of the Fuqua School of Business and other researchers. 3 units. *Staff*

**522. Organization Seminar: A Macro Focus.** The organization and the subunits which make up the organization. Theories of organization, structure, decentralization, divisionalization, functional area integration, task design, incentives and rewards, information systems, and decision rules are developed with an orientation toward their choice and design for high performance. Includes presentation of research by members of the Fuqua School of Business and other researchers. 3 units. *Staff*

**525. Behavioral Decision Theory.** Examines the development of research in individual and group decision behavior. Major emphasis is given to theoretical developments and empirical research, with a range of articles assigned for each topic. The basic topic areas include (1) decision problem structuring, (2) thinking about uncertainties, (3) risk taking, (4) dealing with conflicting values, and (5) combining individual judgments into a group decision. C-L: Psychology: Experimental 316, Psychology: Social and Health Sciences 316, and Statistics 231. 3 units. *Payne*

**531. Financial Accounting Seminar.** The nature of published financial statement information and its relationship with various economic variables. The list of related variables might include stock market data, bankruptcy filings, and the actions of various users of financial statement information, including management, investors, creditors, and regulators. The focus is on the current research methodologies and research efforts used to analyze the above relationships. A background in masters-level accounting and finance is assumed. 3 units. *Staff*

**532. Management Accounting Seminar.** Information systems and their use in facilitating management decision making and organizational control. Emphasis on the appropriate research methodologies and paradigms including information economics, decision theory, and organizational theory. Topics include budgeting, incentive systems/performance evaluation, variance investigation, and cost allocation. 3 units. *Staff*



**551. Finance Theory I.** Mathematical derivation of important results in portfolio theory and asset-pricing models in finance. Topics include: single-period mean-variance efficient portfolios and the CAPM; pareto optimal allocations; multiperiod and continuous-time optimal consumption and portfolio rules; intertemporal asset-pricing model; arbitrage pricing theory; and the term structure of interest rates and inflation risk. Prerequisites: basic mathematics background in calculus, statistics, matrix algebra, optimization, and dynamic programming. 3 units. *Kyle or Viswanathan*

**552. Empirical Finance.** Overview of current empirical methods used in financial economics research. Topics include: univariate and multivariate tests; linear versus nonlinear models; conditional versus unconditional tests; asymptotic theory, generalized method of moments; and the size and power of test statistics. Testing procedures are applied to asset pricing theory, corporate finance, and option pricing theory problems. Prerequisite: Ph.D. level course in econometrics; recommended: Business Administration 551. 3 units. *Bansal*

**553. Finance Theory II.** Mathematical derivation of well-known models in informational economics, market microstructure, and option pricing. Topics include: models of rational expectations, signaling models, principal-agent, and auctions. Market microstructure and advanced option pricing applications are stressed. This course may be taken concurrently with Business Administration 551. Prerequisites: basic mathematics background in calculus, statistics, matrix algebra, optimization, and dynamic programming. 3 units. *Staff*

**561. Seminar in Quantitative Research in Marketing.** An overview of the quantitative techniques which are important in marketing research. Each model and technique will be examined in considerable detail so as to permit an understanding of its assumptions, structure, and usefulness. Topics covered will include the general data analysis techniques as well as models from advertising, new products, and pricing decisions. 3 units. *Staff*

**562. Seminar in Consumer Behavior.** Examines the development of research in consumer behavior. Major emphasis is given to theoretical developments and empirical research, with a range of articles assigned for each topic. Topics include motivation and personality, perceptual processes, information search, choice processes, attitudes and persuasion, learning, and influence in consumer choice. C-L: Psychology: Experimental 315 and Psychology: Social and Health Sciences 315. 3 units. *Bettman*

**563. Marketing Models Seminar.** The primary goals of this seminar are (a) to critically review the most current research in marketing and (b) to gain a better understanding of and ability to build one's own model. After taking this course, students should be able to understand the assumptions and mathematical development of the current quantitative work in marketing and to use this understanding to develop meaningful extensions. 3 units. *Staelin*

**564. Experimental Design and Analysis Seminar.** Examines issues in the design and analysis of experiments. Emphasis on analysis of variance (ANOVA), starting with the basic ANOVA model and examining multiple factor designs, blocking designs, nested models, within subject designs, repeated measure designs, and analysis of covariance. 3 units. *Edell*

**571. Operations Strategy Seminar.** Recent developments in the strategy of operations in both the manufacturing and service sectors. Topics include the focused factory concept, Japanese manufacturing philosophy, technological policy toward new process development and toward new product introduction, vertical integration, choice of capacity and location, industry analysis, and the impact of government regulation.

Emphasis on the development of hypotheses about strategic topics and the empirical means by which they can be tested. 3 units. *Staff*

**572. Seminar in Operational and Technological Tactics.** Current issues in the day-to-day management of manufacturing and service delivery systems. Topics include material requirements planning, capacity requirements planning, quality of work life projects, productivity measurement and enhancement, implementation of new product introductions and production process modifications, quality assurance, production planning and scheduling, and logistics. Concentration on the substance of recent developments, the generation and test of hypotheses about tactical issues, and the applicability of various optimization techniques to the advance of operation tactics. 3 units. *Staff*

**591. Selected Topics in Business.** Allows the doctoral student the opportunity to study special topics in management on an occasional basis depending on the availability and interests of students and faculty. 3 units. *Staff*

**597. Dissertation Research.** For students actively pursuing research on their dissertation. Credit to be arranged. Prerequisites: student must have passed the preliminary examination and have the consent of the director of the doctoral program and instructor. Variable credit. *Staff*

**598. Independent Study.** Allows the doctoral student the opportunity to engage in study or tutorial on special topics on an individual basis under the supervision of a faculty member. Credit to be arranged. Prerequisites: doctoral program standing and consent of the director of the doctoral program and instructor. Variable credit. *Staff*

**599. Directed Research.** Allows the doctoral student to engage in individual research projects under the supervision of a faculty member. Credit to be arranged. Prerequisites: doctoral program standing and consent of the director of the doctoral program and instructor. Variable credit. *Staff*

## Canadian Studies Program

John Thompson, Ph.D., *Director*

The Canadian Studies program offers a certificate of graduate study. The requirements for the certificate include completion of three Canadian Studies courses, including the core course, Interdisciplinary Studies Course 282, Canadian Issues. The other two courses may be from existing courses, or from independent studies with the center's faculty. In addition, the dissertation must be written on a Canadian or Canadian-comparative topic. The student must also demonstrate a knowledge of French or one of Canada's aboriginal languages.

The purpose of the Canadian Studies Program is to formalize and expand the interest of graduate students in Canada, to introduce the study of Canadian life and culture at the undergraduate level, and to encourage such study in primary and secondary schools.

The program awards a limited number of foreign language and area studies graduate fellowships and teaching assistantships for the study of Canada to American residents. Fellows must work on a Canadian or Canadian/comparative dissertation topic within their disciplines and must also study French. Grants of travel aid for field research in Canada are also offered.

The program sponsors lectures by Canadian specialists and supports seminars devoted to Canada. Opportunities for study in Canada are offered to honors undergraduates in Canadian Studies, graduates, and faculty.

Inquiries should be addressed to the Director, Canadian Studies Center, Duke University, Box 90422, Durham, North Carolina 27708-0422.

# The University Program in Cell and Molecular Biology

Professor McClay, *Director* (zoology); Associate Professor Kreuzer, *Director of Graduate Studies*; Professors Augustine (neurobiology), Caron (cell biology), Joklik (microbiology), Kuhn (pharmacology), Modrich (biochemistry), Siedow (botany), and Skene (neurobiology); Assistant Professor Doyle (immunology)

Research training in cell, developmental, and molecular biology is found in eleven departments/programs at Duke University: biochemistry, botany, cell biology, genetics, immunology, microbiology, molecular cancer biology, neurobiology, pathology, pharmacology, and zoology. To effectively utilize this broad spectrum of expertise for the training of promising scientists while still providing a coherent curriculum, the Duke University Program in Cell and Molecular Biology has been established, bringing together the research foci of approximately 120 faculty. The program offers a certificate of graduate studies, with the doctoral degree awarded by one of the eleven degree-granting departments. Prospective students may apply directly to the program or to one of the degree-granting departments. Students admitted to CMB have up to one academic year to affiliate with a degree program.

During the first semester of doctoral study a student will complete the program's six half-semester "mini-course" sequence. This sequence presents a broad-based approach to key areas of contemporary cell and molecular biology, including macromolecular synthesis, structure of macromolecules, genetic analysis, cell biology, modern techniques in molecular biology, and physical chemistry for biologists. Particularly in the second and third semesters, each student will also choose elective courses in an area of specialization. Research training is stressed throughout the program and dissertation research usually begins by the third semester. Applicants must have demonstrated, in addition to overall academic excellence, a proficiency in the biological and physical sciences.

**247. Macromolecular Synthesis.** Fundamentals of DNA replication, transcription, and translation. Transcriptional and translational regulation mechanisms. Consent of instructor required for undergraduates. First half of fall semester. C-L: The University Program in Genetics 247. 2 units. *Garcia-Blanco and Keene*

**248. Cell Biology.** Cellular compartments, protein trafficking, cytoskeleton, chemical signalling, cell division, adhesion. Consent of instructor required for undergraduates. Second half of fall semester. C-L: The University Program in Genetics 248. 2 units. *Bennett and Sheetz*

**251. Molecular Cell Biology.** See C-L: Cell Biology 251. 4 units. *Erickson and staff*

**264. Cell and Molecular Biology Colloquium.** Required of all students. Third- and fourth-year students discuss their dissertation research. 1 unit. *Kreuzer*

**277. Structure of Macromolecules.** Structure of biological macromolecules (proteins and nucleic acids) and the relationship of structure to function and catalysis. Consent of instructor required for undergraduates. Second half of fall semester. C-L: The University Program in Genetics 277. 2 units. *Beese and White*

**278. Genetic Analysis.** Consent of instructor required for undergraduates. See C-L: The University Program in Genetics 278. 2 units. *Garrett and Steege*

**297. Modern Techniques in Molecular Biology.** Discussions of nucleic acid sequencing and manipulation, cloning strategies, vectors, expression, hybridization and blotting methods, PCR, etc. Consent of instructor required for undergraduates. First half of fall semester. 2 units. *Casey and Fehon*



**298. Physical Chemistry for Biologists.** Thermodynamics and kinetics using biological examples; spectroscopy (for example, NMR, UV, CD). Consent of instructor required for undergraduates. Second half of fall semester. 2 units. *Hammes and Spicer*

## Cell Biology

Professor Sheetz, *Chair*; Professor Bennett, *Director of Graduate Studies*; Professors V. Bennett, Blum, C. Bonaventura, J. Bonaventura, Caron, Gutknecht, Hatchell, Johnson, Lieberman, Mandel, McIntosh, McManus, Nicklas, Padilla, Plonsey, Reedy, Somjen, Sommer, and Spach; Associate Professors Akwari, N. Anderson, P. Bennett, Cobb, Corless, Greenfield, Kiehart, Mills, Schachat, Schomberg, Stolp, Vigna, and Wright; Assistant Professors P. Anderson, Argon, Benjamin, Capel, Cohn, Davis, eLozanne, Dittman, Drezner, Fehon, Freemark, Freudenrich, Garrett, Hannun, Iglehart, Kindman, Kraus, Lin, Mangel, Marchuck, Meyer, Nicchitta, Obeid, O'Halloran, Saling, Sladen, Swenson, Titus, and Webb; Professors Emeriti Counce, Jöbsis, and Moses; Associate Medical Research Professors Aitken and LeFurgey; Assistant Medical Research Professors Chang, Klitzman, Lobaugh, and O'Brien; Adjunct Professor Rodbell; Adjunct Assistant Professor Carter

The Department of Cell Biology offers graduate training in modern cell biology and physiology leading to the Ph.D. degree.

Specific research interests include: cytoskeleton and cell motility, including both actin and microtubule based motors, mechanisms of contraction, vesicle transport and chromosome movement; cardiac and skeletal muscle, including ultrastructure, physiology, developmental and molecular biology; cell adhesion and biophysics of membrane interactions; extracellular matrix; protein secretion and trafficking mechanisms; transmembrane receptors and molecular mechanisms of signal transduction; cell physiology, metabolism, and membrane transport in brain, kidney, muscle; vertebrate photoreceptors; high resolution electron microscopy and computer image processing; and developmental biology using mouse and *drosophila*.

The department has excellent facilities for light and electron microscopy; X-ray diffraction; cell culture and micromanipulation; and modern biochemistry and molecular biology. The Department of Cell Biology also participates in several university-wide interdisciplinary training programs, including genetics, cell and molecular biology, neurobiology, pharmacology, biomedical engineering, and toxicology.

The Division of Physiology, which is centered in the Department of Cell Biology, brings together faculty and students with interests in cellular, organ, and systemic physiology. The program of graduate studies in physiology is organized through this division. The Division of Developmental Biology focuses research and teaching on mechanisms of development. Mouse and *drosophila* developmental systems are studied using modern approaches of genetics and molecular biology. For further information, contact the director of graduate studies.

**200. Cell and Tissue Biology.** Lectures on the structure and function of the cells and tissues of the body. The laboratory provides practical experience with light microscopy studying and analyzing our extensive slide collection of mammalian tissues. Designed for medical students; graduate students may take this course with consent of instructor. Fall. 3 units. *McIntosh and staff*

**201. Microscopic Anatomy.** Histology of all the major organs of the body. Structure and cell biology at both the light and electron microscope levels. Laboratory sessions are used to study and analyze our extensive slide collection of mammalian tissues with light microscopes. Designed for medical students; graduate students accepted with consent of instructor. Prerequisite: Cell Biology 200. 3 units. *McIntosh and staff*

**202. Medical Physiology.** Lectures and conferences on cell and organ physiology. Human and medical aspects are stressed in clinical conferences. Computer-based labo-

ratory exercises. Designed for medical students; graduate students only with consent of instructor. Students may take either 202 or 203 and 204, but not both, for credit. Fall. Prerequisite: Cell Biology 200. 4 units. *N. Anderson and staff*

**203. Introduction to Physiology.** Modern organ physiology: cellular physiology, the heart and cardiovascular system, the respiratory system, the kidney, the gastrointestinal, endocrine, and nervous systems. Prerequisite: elementary biology. 4 units. *Blum and staff*

**204. Cell and Molecular Physiology.** Selected aspects illustrating the use of cellular and molecular approaches to the understanding of physiological organ functions. Topics include: molecular basis of contraction and muscle diversity, cell-cell interactions through cell junctions, paracrine or hormonal signals, signal transduction, molecular basis of channel and carrier functions, physiology of transgenic mice. Prerequisite: Cell Biology 203 or cell biology. 3 units. *Mandel and staff*

**205. Design and Analysis of Biological Experiments.** An introductory-level course for individuals engaged in or planning research projects in life sciences. Emphasis is on developing an adequate background in the fundamentals of probability, statistics, and hypotheses testing, and the application of those principles to commonly encountered research situations. The course will include lectures, hands-on use of the Statistical Analysis System (SAS) computer package for data analysis, and critical evaluation of experimental designs employed in representative studies from the literature. 3 units. *Lobaugh*

**210. Independent Study.** Directed reading and study in cell biology/physiology. Descriptions of specific areas may be obtained from the director of graduate studies. Consent of director of graduate studies required. 3 to 9 units each. C-L: Marine Sciences. Variable credit. *Staff*

**211. Cellular Mechanisms of Injury.** Selected topics in mechanisms of injury at the cellular and molecular levels chosen for reading and discussion in a combined lecture/seminar format. Subject matter varies each semester; can be taken more than once. Consent of instructor required. 3 units. *Fridovich, LeFurgey, Lieberman, Mandel, Steenbergen, and guest faculty*

**212. Topics in Reproductive Biology.** An in-depth, integrative study of male and female reproduction, including (i) hypothalamic, pituitary, and gonadal control mechanisms, (ii) gamete structure and development, (iii) fertilization, and (iv) pregnancy and parturition. Guest lectures will emphasize the interface between basic, veterinary, and medical sciences. Prerequisite: Cell Biology 269 or equivalent. 3 units. *N. Anderson, Saling, Schomberg, or Tyrey*

**213. Oxygen and Physiological Function.** The sensitive dependence of many physiological functions on cellular oxidative metabolism. The delicate balance between the oxygen toxicity of hyperoxia and the consequences of hypoxia will be explored from organ malfunction to cell death. Prerequisite: an introductory course in physiology or biochemistry or consent of instructor. 2 units. *Jöbsis*

**219. Molecular and Cellular Bases of Differentiation.** A multidisciplinary approach stressing the molecular, cellular, and genetic processes involved in differentiation in eukaryotes. C-L: Immunology 219, Neurobiology 219, and Pathology 219. 3 units. *Counce and staff*

**237. Analytical Imaging in Biomedical Research.** Weekly seminars to discuss concepts and techniques in high resolution analytical imaging of cells and subcellular organelles and to review application of these concepts to structural-functional correlations in cell physiology and pathophysiology. 3 units. *LeFurgey*



**243. Environmental Biochemistry.** Introduction to the (macro)molecules of life and fundamental metabolic pathways. Topics are presented in the context of environmental perturbations. Fundamental aspects of energetics, proteins, enzymes, carbohydrates, lipids, and nucleic acids. Emphasis on mechanisms of adaptation, molecular controls, and responses to toxicants. (Given at Beaufort.) Prerequisite: organic chemistry. C-L: Environment 243 and Marine Sciences. 3 units. *C. Bonaventura*

**244L. Molecular and Cellular Processes in Marine Organisms.** Joint research projects on the adverse effects of environmental pollutants on marine organisms at the cellular and molecular level. Research methodologies include: spectroscopy (UV/VIS, fluorescence, and atomic absorption); subcellular fractionation; protein purification and characterization using chromatography and electrophoresis; analysis of pollutant-induced damage to proteins, membranes, and DNA; measurement of activity of enzymatic defense systems. Lectures cover molecular mechanisms of damage and damage control, and concepts that underlie the methods to be used. (Given at Beaufort.) Prerequisite: organic chemistry. C-L: Environment 244L and Marine Sciences. 4 units. *Bonaventura, C. and Brouwer*

**251. Molecular Cell Biology.** Current research topics in cell biology presented in a lecture and discussion format based on recent research papers. Topics include: protein secretion and trafficking; mitochondria and organelles; the nucleus; cytoskeleton and cell motility; extracellular matrix and cell adhesion; growth factors and signalling; cell cycle. C-L: Cell and Molecular Biology 251. 4 units. *Erickson and staff*

**259. Molecular Biology I: Proteins and Enzymes.** Prerequisites: biochemistry, organic chemistry, and physical chemistry. See C-L: Biochemistry 259; also C-L: Immunology 259, Microbiology 259, and Molecular Biophysics 259. 3 units. *Fierke and staff*

**263. Molecular Genetics of Drosophila Development.** Discussion of recent developments in the genetic and molecular analysis of Drosophila development. Topics include morphogenesis, neurogenesis, embryonic patterning, and cellular interactions. Student presentations are integral to the course. Consent of instructor required. C-L: The University Program in Genetics 263 and Zoology 263. 2 units. *Fehon, Kiehart, and Wharton*

**268. Molecular Biology II: Nucleic Acids.** Prerequisites: introductory biochemistry and equivalents of Biochemistry 259 and Cell and Molecular Biology 247, 277, and 278. See C-L: Biochemistry 268; also C-L: Immunology 268, Microbiology 268, and The University Program in Genetics 268. 4 units. *Steege and staff*

**269. Advanced Cell Biology.** Prerequisite: introductory cell biology or consent of instructor. See C-L: Zoology 269; also C-L: Botany 269 and Immunology 269. 3 units. *Siedow and staff*

**280. Student Seminar.** Preparation and presentation of seminars to students and faculty on topics of broad interest to cell biology and physiology. Required of Department of Cell Biology students. 1 unit. *Staff*

**293. Membrane Biophysics.** See C-L: Molecular Biophysics 293. 3 units. *McIntosh and staff*

**296. Developmental Biology Colloquium.** 3 units. *Staff*

**301. Introduction to Cell and Molecular Biology.** Three weeks of intensive laboratory exercises utilizing modern techniques of gene cloning; PCR; protein expression and purification; light and electron microscopy. Laboratory work will be supplemented with lectures and discussion groups. Course begins two weeks prior to the opening of the semester. 1 unit. *Titus and staff*



**312. Research.** Specific areas of investigation include: membrane structure; extracellular matrix; cell adhesion; cell motility; cytoskeletal elements; chromosome structure and movement; genetics and molecular biology of contractile proteins; muscle ultrastructure; gamete biology; molecular and structural biology of photoreceptors; hormone receptors; cell growth; developmental biology; membrane transport and electrophysiology; metabolism; cardiovascular physiology; microcirculation; hyperbaric physiology; and theoretical studies and computer modeling of physiological processes. Variable credit. *Staff*

**317. Neuronal Signaling: Ion Channels and Synapses.** Consent of instructors required. Fall. See C-L: Neurobiology 317. 3 units. *Augustine, Kauer, Lo, and Reinhart*

**320. Research Problems in Cell Biology.** Coverage of selected topics important in current cell biology research. Format includes faculty lectures and directed readings of current research papers presented and discussed by students. 3 units. *Sheetz and staff*

**417. Cellular Signaling.** Mechanism of action of hormones at the cellular level including hormone-receptor interactions, secondary messenger systems for hormones, mechanisms of regulation of hormone responsiveness, regulation of growth, differentiation and proliferation, mechanisms of transport and ion channels, stimulus sensing and transduction. Some lectures stress the clinical correlation of the basic course concepts. C-L: Biochemistry 417 and Pharmacology 417. 3 units. *Bell, Caron, Casey, Means, and invited lecturers*

## COURSES CURRENTLY UNSCHEDULED

**215. Seminar in the Physiology of Disease**

**217. Selected Membrane Transport**

**223. Cellular and Integrative Cardiovascular Physiology and Biophysics**

**232. Extracellular Matrix and Cell Adhesion**

**236S. Seminar on the Cellular and Molecular Biology of Skeletal Muscle**

**305. Selected Topics in Cardiac Physiology**

## The University Program in Cellular and Biosurface Engineering

David F. Katz, Ph.D., *Director*; W. M. Reichert, Ph.D., *Director of Graduate Studies*

The University Program in Cellular and Biosurface Engineering is a multidisciplinary program which integrates activities in engineering, the life sciences, and medicine. Over thirty faculty from the graduate school Departments of Biochemistry, Biomedical Engineering, Cell Biology, Chemistry, Electrical Engineering, Mechanical Engineering and Materials Science, Medicine, Neurobiology, Pathology, Physics, and Zoology as well as the departments of medicine, ophthalmology, obstetrics and gynecology, and surgery in the School of Medicine, are members of the center. Participating faculty are a select but diverse group of experts in a wide range of fields, and all conduct research in which cellular and biosurface engineering plays a central role.

The program emphasizes research, education (both undergraduate and graduate) and interactions with industry. The focus of the program is upon biological cells and tissues, and the materials (both natural and synthetic) with which they interact in natural biological processes, and in medical diagnosis and therapy. It applies the principles and experimental methods of engineering to improve the understanding of these phenomena, and uses this knowledge to develop solutions to practical as well as fundamental problems. Thus, such work spans the most basic research to its applications in health care.

problems. Thus, such work spans the most basic research to its applications in health care.

Students apply for graduate study to participating departments and are subject to the degree requirements of the university and these home departments. The University Program in Cellular and Biosurface Engineering offers a certificate of graduate study. The requirements for the certificate include completion of four core courses: Cellular and Surface Engineering (Mechanical Engineering 268); Laboratory in Cellular Engineering and Biosurface Science (Biomedical Engineering 265); and two advanced courses in cell biology and proteins, such as Advanced Cell Biology (Cell Biology 269) and Molecular Biology I: Proteins and Enzymes (Biochemistry 259). Participation in a seminar series (Biomedical Engineering 301, 302) and in an industrial internship program is also required. A limited number of fellowships are granted, providing stipend and tuition support.

For additional information contact The University Program in Cellular and Biosurface Engineering, B-213 Levine Science Research Center, Box 91010, Duke University, Durham, North Carolina 27708-1010.

## Chemistry

Professor Baldwin, *Chair* (101 Gross Chemical Laboratory); Associate Professor MacPhail, *Director of Graduate Studies* (377 Gross Chemical Laboratory); Professors Bonk, Chesnut, Crumbliss, Lochmüller, McGown, McPhail, Palmer, Pirrung, Porter, Shaw, and Wells; Associate Professors Fierke, Henkens, Toone, and Yang; Assistant Professors Burk, Coury, Faust, and Oas; Professors Emeriti Arnett, Bradsher, Hobbs, Poirier, Quin, Smith, Strobel, and Wilder; Adjunct Professors Ghirardelli, Kiserow, and Sternbach; Adjunct Associate Professor Chao; Adjunct Assistant Professor Andrews

The Department of Chemistry offers graduate work leading to the Ph.D. degree. While students are normally admitted only to the Ph.D. program, some students do ultimately pursue an M.S. degree. Entering graduate students should normally have taken an undergraduate degree in chemistry, along with related work in mathematics and physics. Graduate courses are offered in the fields of analytical, biological, inorganic, organic, physical, and theoretical chemistry, and there are active research programs in each of these areas. In addition, chemistry graduate students are also involved in a variety of interdisciplinary research programs, including Biological Chemistry, Toxicology, Pharmacology, and Molecular Biophysics.

Required course work is usually completed during the first year of residence. During the fall semester, students take nine units selected from four, three-unit core courses (201, 203, 205, 207), along with the research orientation seminar (377). Up to three units of the core course requirement may also be satisfied by approved courses from outside the department. In the spring semester, students take nine units of more specialized 300-level field courses selected to complement their chosen area of research. Up to three of these units may be satisfied by graded research and as many as three units may be taken from approved courses outside the department.

Further details concerning the general departmental program, admissions, departmental facilities, the faculty, ongoing research, and financial support may be obtained from the director of graduate studies.

### For Seniors and Graduates

**201. Molecular Spectroscopy.** Selected spectroscopic methods in the study of molecular structure. Symmetry and group theoretical basis for selection rules, theories of magnetic and optical resonance, and interpretation of spectra; examples from both inorganic and organic chemistry. Three lectures. Open to especially well-prepared undergraduates by consent of director of undergraduate studies. 1 to 3 units. Variable credit. *Baldwin, Palmer, Pirrung, and Shaw*



**203. Quantum Chemistry.** Basic principles of quantum and group theoretical methods. Topics include symmetry and a review of the fundamentals and the mathematical foundations of quantum theory. Emphasis on the application of molecular orbital theory to organic and inorganic systems. Open to especially well-prepared undergraduates by consent of director of undergraduate studies. 1 to 3 units. Prerequisite: Chemistry 162L. Variable credit. *Chesnut, MacPhail, Pirrung, and Porter*

**205. Structure and Reaction Dynamics.** Structure and mechanisms in organic and inorganic compounds, substitution reactions, linear free energy relations, and molecular rearrangements. Emphasis on the use of kinetic techniques to solve problems in reaction mechanisms. Three lectures. Open to especially well-prepared undergraduates by consent of director of undergraduate studies. 1 to 3 units. Variable credit. *Crumbliss, Porter, Toone, and Wells*

**207. Principles of Kinetics, Thermodynamics, and Diffraction.** Three lectures. Open to especially well-prepared undergraduates by consent of director of undergraduate studies. 1 to 3 units. Variable credit. *Henkens, McPhail, and Yang*

**275, 276. Advanced Studies.** (1) Analytical chemistry, (2) inorganic chemistry, (3) organic chemistry, and (4) physical chemistry. Open to especially well-prepared undergraduates by consent of director of undergraduate studies. 3 units each. *Staff*

#### For Graduates

**300. Basic Statistical Mechanics.** Fundamentals of quantum and classical statistical mechanics using the ensemble approach. Emphasis on systems of weakly interacting particles with internal degrees of freedom. 3 units. *Chesnut, MacPhail, and Yang*

**302. Basic Quantum Mechanics.** The fundamentals of quantum mechanics with special emphasis on chemical applications. Topics included are: linear algebra, the uncertainty relations, angular momentum, perturbation theory and time dependent phenomena, molecules in electromagnetic fields, group methods, and electron correlation. 3 units. *Chesnut and Yang*

**303, 304. Special Topics in Physical Chemistry.** Presentation of one or more topics of staff interest such as advanced methods in crystallography, light scattering and small angle X-ray diffraction, application of ESR spectroscopy to chemical problems, electronic spectroscopy of proteins, group theory, intermolecular forces, liquid crystals, methods of determining the rates of elementary steps in reaction kinetics, physical chemistry of aerosols, physical-chemical methods of polymer characterization, structure and bonding in metallo-enzymes, statistical mechanics of fluids, topics in structural chemistry, and triplet excitons. 1 to 3 units each. Variable credit. *Staff*

**306. Biophysical Chemistry.** The interrelationships between structure, function, and mechanisms of biological macromolecules. Principles of dynamics (including kinetics, reactivity, and transport) and structure (including thermodynamics, NMR, fluorescence, CD spectroscopy, and other applicable biophysical techniques). 2 to 3 units. Variable credit. *Henkens or Shaw*

**310. Electronic Structure and Spectroscopy of Transition Metal Compounds.** The theory of ligand fields and its application to the electronic spectroscopy, electron spin resonance, and magnetism of transition metal compounds. 2 units. *Palmer*

**312. Chemistry of the Main Group Elements.** Preparations, bonding, structures, and reactivity of compounds of the main group elements with emphasis on members of the *p* block groups. 3 units. *Crumbliss and Wells*

**313. Special Topics in Inorganic Chemistry.** Lectures, oral reports, and discussions on advanced topics and recent advances in the field of inorganic chemistry. Examples



of topics which may be discussed are bioinorganic chemistry, fluxional molecules, homogeneous catalysis, synthesis and properties of selected groups of compounds, and new physical methods. 1 to 3 units. Variable credit. *Staff*

**314. Advanced Inorganic Reaction Mechanism.** A discussion of the mechanism of coordination and organometallic reactions in solvent solution. Examples include redox reactions and linear free energy relationships. Consent of instructor required. 2 units. *Crumbliss*

**320. Synthetic Organic Chemistry.** A study of the scope and limitations of the more important types of reactions in synthetic organic chemistry. Some discussion of the rapidly developing use of transition metals, complex hydrides, and photochemistry will be included. 3 units. *Baldwin or Pirrung*

**322. Organic Reactive Intermediates.** A discussion of reactive intermediates in organic chemistry. Topics will include carbanions, carbenes, carbonium ions, free radicals, photochemical excited states, and other reactive species. 3 units. *Pirrung or Porter*

**324. Special Topics in Organic Chemistry.** Advanced topics and recent developments in the field of organic chemistry. Representative topics include heterocyclic chemistry, natural products chemistry, carbohydrate chemistry, molecular mechanics, and two-dimensional NMR spectroscopy. Lectures and written and oral reports. 1 to 3 units. Variable credit. *Staff*

**326. Bioorganic Chemistry.** An investigation of biochemical principles from the viewpoint of the organic chemist. Fundamental and applied enzymology, enzyme inhibition, enzyme models, biosynthetic pathways, methodology for the study of biological transformations, molecular biology for organic chemists. 3 units. *Pirrung and Toone*

**330. Separation Science.** Section .01, fundamental separation chemistry; section .02, practical aspects of chromatographic methods; section .03, larger scale processes. 1 to 3 units. Variable credit. *Lochmüller*

**331, 332. Special Topics in Analytical Chemistry.** An advanced treatment of important areas in modern analysis. Possible topics include: electrochemistry, small computer applications, magnetic resonance, and problem-solving approaches. 1 to 3 units each. Variable credit. *Staff*

**334. Electroanalytical Chemistry.** Fundamentals and applications of techniques for probing heterogeneous charge transfer reactions, including cyclic voltammetry at conventional and ultra micro electrodes. 2 units. *Coury*

**336. Analytical Spectroscopy.** Fundamentals of atomic and molecular spectroscopies for chemical analysis, emphasizing absorption, emission, and luminescence techniques. 2 units. *McGown*

**373, 374. Seminar.** One hour a week discussion. 1 unit each. *All members of the graduate staff*

**375, 376. Research.** Instruction in methods used in the investigation of original problems. Individual work and conferences. 1 to 6 units each. Variable credit. *All members of the graduate staff*

**377. Research Orientation Seminar.** A survey of departmental research. Required of all entering graduate students in chemistry. Consent of director of graduate studies required. 1 unit. *All members of the graduate staff*

## Classical Studies

Professor Boatwright, *Chair* (237 Allen); Professor Rigsby, *Director of Graduate Studies* (229A Allen); Professors Burian, Clay, Connor, Davis, Newton, Oates, Stanley, and Younger; Assistant Professors Cormack and Janan; Professors Emeriti Richardson and Willis; Research Associate van Minnen

The Department of Classical Studies offers graduate work leading to the A.M. and Ph.D. degrees in classical studies. Work in the department encompasses all aspects of the Greco-Roman world: students in the program are able, through course work, directed research, and their own teaching, to prepare for careers of teaching and research as broadly trained classical scholars. For regular admission, students should offer at least three years of college study in one of the classical languages and two in the other. Before developing a specialization within the program, students are expected to acquire facility in both Greek and Latin, a broad knowledge of the literatures and of ancient history and archaeology, and command of research methods. Reading knowledge of French and German is required for the Ph.D. There are no specific course requirements for the Ph.D. in classical studies, but students normally complete their coursework by the end of the fifth semester. The resources of the department include important collections of Greek and Latin manuscripts and papyri, computer facilities in the ancient languages, and a valuable study collection of Greek and Roman art.

### GREEK

#### For Seniors and Graduates

200. **Readings in Greek Literature.** 3 units. *Staff*

201. **Studies in Greek Literature I.** 3 units. *Staff*

202. **Studies in Greek Literature II.** 3 units. *Staff*

203. **Homer.** Problems of language and structure in the *Iliad*; present state of Homeric scholarship. 3 units. *Burian or Stanley*

205. **Greek Lyric Poets.** Fragments of the early lyric poets; selected odes of Pindar and Bacchylides. 3 units. *Burian or Stanley*

207. **The Dramatists.** Readings and studies of selected plays by the major playwrights Aeschylus, Sophocles, Euripides, and Aristophanes. 3 units. *Burian*

211. **Greek Literature in the Roman Empire.** Readings in the Second Sophistic, the novel, history, philosophy, and poetry. 3 units. *Rigsby*

222. **The Historians.** Readings and studies in the major Greek historians Herodotus, Thucydides, and Xenophon. 3 units. *Connor or Oates*

#### For Graduates

301. **Seminar in Greek Literature I.** Selected authors and topics. 3 units. *Burian, Clay, or Stanley*

302. **Seminar in Greek Literature II.** Selected authors and topics. 3 units. *Burian, Clay, or Stanley*

313. **Seminar in Greek Epigraphy.** 3 units. *Rigsby*

399. **Directed Reading and Research.** Credit to be arranged. Variable credit. *Staff*

#### Courses Currently Unscheduled

209. **Introduction to Hellenistic Literature**

- 210. Alexandrian Poetry
- 221. Early Greek Prose
- 226. The Orators
- 321. Seminar in Literary Papyri

## LATIN

### For Seniors and Graduates

- 200. Readings in Latin Literature. 3 units. *Staff*
- 201. Studies in Latin Literature I. 3 units. *Staff*
- 202. Studies in Latin Literature II. 3 units. *Staff*
- 205. The Roman Novel. Readings in Petronius and Apuleius. 3 units. *Davis, Richardson, or Stanley*
- 206S. Cicero. 3 units. *Richardson*
- 207S. Vergil's *Aeneid*. Intensive analysis of all of Vergil's *Aeneid*, focusing on text and historical context, complemented by research papers and reports. Not open to students who have taken Latin 107S. 3 units. *Davis or Newton*
- 208S. Lyric and Occasional Poetry. Readings in the works of Catullus, Horace, and Martial. Same as 108S, except additional term paper required. 3 units. *Davis, Janan, or Newton*
- 211S. Elegiac Poets. Analysis of most of the *corpora* of Propertius, Tibullus, and Ovid with close attention to the stylistics of the poems, their place in the traditions of Latin love elegy, and their relation to other phenomena of the Augustan period. Not open to students who have taken Latin 111S. 3 units. *Davis, Janan, or Richardson*
- 214S. The Historians. Investigations of the Romans' conceptions and practices of writing history, based on detailed analysis of the works of Sallust, Livy, and Tacitus. Additional readings in the fragments of other Latin historians, and in comparative Greek historians. Not open to students who have taken Latin 114S. 3 units. *Boatwright or Richardson*
- 217T. Latin Prose Composition. The course content is determined by the needs of the students enrolled. 3 units. *Staff*

221. Medieval Latin. Selected works of the Latin Middle Ages from Prudentius to the humanists. Genres studied usually include the hymn, sequence, drama, lyric, saints' lives, chronicle, epic, and epistle. C-L: Medieval and Renaissance Studies. 3 units. *Newton*

### For Graduates

- 301. Seminar in Latin Literature I. Selected authors and topics. 3 units. *Boatwright, Davis, Janan, or Newton*
- 302. Seminar in Latin Literature II. Selected authors and topics. 3 units. *Boatwright, Davis, Janan, or Newton*
- 312. Seminar in Latin Palaeography. 3 units. *Newton*
- 399. Directed Reading and Research. Credit to be arranged. Variable credit. *Staff*

### Courses Currently Unscheduled

- 204. Epic of the Silver Age



**314. Seminar in Latin Epigraphy**

**315. Seminar in Roman Law**

**CLASSICAL STUDIES**

**For Seniors and Graduates**

**203. Ancient Political Philosophy.** See C-L: Political Science 223. 3 units. *Gillespie or Grant*

**211S. Plato.** Selected dialogues. C-L: Philosophy 211S. 3 units. *Ferejohn*

**217S. Aristotle.** Selected topics. C-L: Philosophy 217S. 3 units. *Ferejohn*

**220S. Topics in Greek Art.** Consent of instructor required. Not open to students who have taken Art 201S. See C-L: Art History 201S. 3 units. *Cormack*

**222. Fifth and Fourth Century Greece.** From the Persian Wars to the dominance of Philip of Macedon. C-L: History 260. 3 units. *Oates or Rigsby*

**224. The Roman Republic.** The rise of Rome, to its mastery of the Mediterranean; the political, social, and intellectual consequences. C-L: History 263. 3 units. *Boatwright or Rigsby*

**225. The Roman Empire.** The foundation, consolidation, and transformation of Roman rule from Augustus to Diocletian. C-L: History 264. 3 units. *Boatwright*

**227S. Topics in Roman Art.** Consent of instructor required. Not open to students who have taken Art 202S. See C-L: Art History 202S. 3 units. *Cormack*

**230S. Topics in Early Christian and Byzantine Art.** Consent of instructor required. Not open to students who have taken Art 233S. See C-L: Art History 233S; also C-L: Medieval and Renaissance Studies and Religion 275S. 3 units. *Wharton*

**231S. Greek Sculpture.** Free standing, relief, and architectural sculpture from the archaic period to the Hellenistic age, representing changing aesthetic, social, and political aims. Not open to students who have taken Art 238S. C-L: Art History 238S. 3 units. *Younger*

**232S. Greek Painting.** From the Late Bronze Age to the fourth century B.C., with emphasis on archaic and classical Athenian vase painters. Not open to students who have taken Art 237S. C-L: Art History 237S. 3 units. *Stanley*

**258. The Hellenistic and Roman East.** The social and cultural history of the Greco-Roman world, concentrating on papyrological evidence. Prerequisites: knowledge of ancient Greek and Latin. 3 units. *Oates*

**For Graduates**

**301. Proseminar: Introduction to Classical Studies.** 3 units. *Rigsby*

**311. Archaeology Seminar I.** Selected topics. 3 units. *Staff*

**312. Archaeology Seminar II.** Selected topics. 3 units. *Staff*

**321. Seminar in Ancient History I.** Selected topics. 3 units. *Boatwright, Oates, or Rigsby*

**322. Seminar in Ancient History II.** Selected topics. 3 units. *Boatwright, Oates, or Rigsby*

**399. Directed Reading and Research.** Credit to be arranged. Variable credit. *Staff*

## Courses Currently Unscheduled

- 221. Archaic Greece
- 223. Alexander and the Hellenistic World
- 226. Late Antiquity
- 233S. Greek Architecture
- 234S. Roman Sculpture
- 235S. Roman Architecture
- 236S. Roman Painting
- 327. Seminar in Byzantine History

## Computer Science

Professor Vitter, *Chair* (D315 Levine Science Research Center); Associate Professor of the Practice Ramm, *Associate Chair* (D310 Levine Science Research Center); Associate Professor Wagner, *Director of Graduate Studies* (D336 Levine Science Research Center); Professors Behringer, Biermann, Gelenbe, Loveland, Marinos, Palmer, Reif, Rose, Starmer, Trivedi, and Utku; Associate Professors Agarwal, Board, Ellis, Greenside, and Kedem; Assistant Professors Chase, Kao, Lebeck, Prisant, and Sun; Associate Professor of the Practice Astrachan; Assistant Professor of the Practice Rodger; Professors Emeritus Gallie and Patrick; Adjunct Professors Coughran and Whitted; Adjunct Associate Professor Brglez; Adjunct Assistant Professors Levenson and Marshall

The Department of Computer Science offers programs leading to the M.S. and Ph.D. degrees in areas of concentration including systems, algorithms, scientific computing, and artificial intelligence. The first two years of the Ph.D. program are typically spent completing coursework, breadth, and research requirements. The breadth requirement is satisfied by passing a qualifying exam or receiving a "quals pass" in four of the six subject areas covered by courses designated below with an asterisk (\*). In addition, Ph.D. students complete at least four other computer science courses and two courses in a related, noncomputer science field. To satisfy the research requirement, students complete a two-semester project under faculty supervision which demonstrates ability to dissect problems, propose solutions, and analyze critically. All first-year Ph.D. students participate in a special seminar course (CPS 300) during the first semester to assist them in planning their research projects.

The master's degree requires successful completion of ten courses and a thesis or project, and can be completed in one year of full-time study or on a part-time basis.

A student entering graduate work in computer science should have had three semesters of calculus and one semester of linear algebra, and should have a knowledge of data structures, and of assembler as well as higher-level computer programming languages. Research interests of present faculty include mathematical foundations of computer science, artificial intelligence, analysis of algorithms, programming methodology, real-time computing, operating data base systems, computer systems design and analysis, parallel processing systems, scientific computation (including numerical analysis), and VLSI design.

Students should consult the document *Graduate Degree Requirements of the Computer Science Department* for degree requirements not listed in this bulletin.

### For Seniors and Graduates

**206. Programming Languages.** Information binding, data structures and storage, control structures, recursion, execution environments, input/output; syntax and seman-

tics of languages; study of PL/1, Fortran, Algol, APL, LISP, SNOBOL, and SIMULA; exercises in programming. Not open to students who have taken Computer Science 201. Prerequisite: Computer Science 200 or 208. 3 units. *Wagner*

**208. Programming Methodology.** Practical and theoretical topics including structured programming, specification and documentation of programs, debugging and testing strategies, choice and effective use of programming languages and systems, psychology of computer programming, proof of correctness of programs, analysis of algorithms, and properties of program schemata. Not open to students who have taken Computer Science 200. Prerequisite: Computer Science 100 or 103. 3 units. *Staff*

**\*210. Operating Systems.** Fundamental principles of operating system design applied to state-of-the-art computing environments (multiprocessors and distributed systems) including process management (coscheduling and load balancing), shared memory management (data migration and consistency), and distributed file systems. Advanced topics include transaction-based operating systems, reliable communication protocols, concurrency control and recovery mechanisms, computer security, and performance analysis. Not open to students who have taken Computer Science 231. 3 units. *Chase or Ellis*

**214. Computer Networks and Distributed Systems.** Basic systems support for process-to-process communications across a computer network. The TCP/IP protocol suite and the Berkeley sockets application programs interface. Development of network application programs based on the client-server model. Remote procedure call and implementation of remote procedure call. Not open to students who have taken Computer Science 255. Prerequisite: knowledge of the C programming language. 3 units. *Staff*

**216. Data Base Methodology.** Basic concepts and principles. Relational, hierarchical, and network approaches to data organization; data entry and query language support for data base systems; theories of data organization; security and privacy issues. Not open to students who have taken Computer Science 241. Prerequisites: Computer Science 104 and either 109 or 155 or equivalent. 3 units. *Staff*

**218. Compiler Construction.** Models and techniques used in the design and implementation of assemblers, interpreters, and compilers. Lexical analysis, compilation of arithmetic expressions and simple statements, specifications of syntax, algorithms for syntactic analysis, code generation and optimization techniques. Not open to students who have taken Computer Science 232 before fall 1994. 3 units. *Wagner*

**\*220. Computer Systems Organization.** Hardware and software aspects. Processor, memory, device, and communication subsystems; case studies of hardware system organization, for example, parallel, associative, fault-tolerant; organization of software systems to exploit hardware systems organization; economic and reliability aspects of various hardware organizations. Not open to students who have taken Computer Science 252 before fall 1994. Prerequisites: Computer Science 104 and 120 or 157. 3 units. *Kedem, Lebeck, or Wagner*

**222. Introduction to VLSI Systems.** A first course in VLSI design with CMOS technologies. A study of devices, circuits, fabrication technology, logic design techniques, subsystem design and system architecture. Modeling of circuits and subsystems. Testing of gates, subsystems and chips, and design for testability. The fundamentals of full-custom design, and some semi-custom design. Not open to students who have taken Computer Science 210 before fall 1994. Prerequisite: Electrical Engineering 151 or equivalent; Electrical Engineering 161 or equivalent. 3 units. *Staff*

**223. Application Specific VLSI Design.** Introductory VLSI design course. Modern design methods and technology for implementing application specific integrated cir-



cuits (ASICs). Semicustom design methodology, semicustom VLSI technologies such as gate arrays, standard cells and FPGAs; the use of ASIC Computer Aided Design (CAD) tools. Mapping algorithms into high performance silicone implementation. Prerequisite: course in logic design. 3 units. *Kedem*

**225. Fault-Tolerant and Testable Computer Systems.** Not open to students who have taken Computer Science 207. Prerequisite: Electrical Engineering 151L or equivalent. See C-L: Electrical Engineering 254. 3 units. *Marinos*

**226. Mathematical Methods for Systems Analysis I.** Basic concepts and techniques used in the stochastic modeling of systems. Elements of probability, statistics, queuing theory, and simulation. Prerequisite: four semesters of college mathematics. C-L: Electrical Engineering 255. 3 units. *Trivedi*

**\*230. Design and Analysis of Algorithms.** Design and analysis of efficient algorithms. Algorithmic paradigms. Applications include sorting, searching, dynamic structures, graph algorithms, randomized algorithms. Computationally hard problems. NP completeness. Not open to students who have taken Computer Science 205. Prerequisite: Computer Science 100 or equivalent. 3 units. *Agarwal, Kao, or Reif*

**232. Mathematical Analysis of Algorithms.** Techniques for efficient implementation and precise analysis of computer algorithms. Combinatorial mathematics and elementary probability. Emphasis on obtaining exact closed-form expressions describing the worst-case or average-case time and space requirements for particular computer algorithms, whenever possible. Asymptotic methods of analysis for obtaining approximate expressions in situations where exact expressions are too difficult to obtain or to interpret. Not open to students who have taken Computer Science 202. Prerequisites: Mathematics 103 and 104 or equivalents. 3 units. *Vitter*

**234. Computational Geometry.** Models of computation and lower-bound techniques; storing and manipulating orthogonal objects; orthogonal and simplex range searching, convex hulls, planar point location, proximity problems, arrangements, linear programming and parametric search technique, probabilistic and incremental algorithms. Not open to students who have taken Computer Science 240 before fall 1994. Prerequisite: Computer Science 205 or 230 or equivalent. 3 units. *Agarwal or Reif*

**236. Parallel Algorithms.** Models of parallel computation including parallel random access machines, circuits, and networks; NC algorithms and P-completeness; graph algorithms, sorting algorithms, network routing, tree contraction, string matching, parsing algorithms; randomization and derandomization techniques. Not open to students who have taken Computer Science 230 before fall 1994. Prerequisite: Computer Science 205 or 230 or equivalent. 3 units. *Kao or Reif*

**\*240. Computational Complexity.** Turing machines, undecidability, recursive function theory, complexity measures, reduction and completeness, NP, NP-Completeness, co-NP, beyond NP, relativized complexity, circuit complexity, alternation, polynomial time hierarchy, parallel and randomized computation, algebraic methods in complexity theory, communication complexity. Not open to students who have taken Computer Science 225 before fall 1994. Prerequisite: Computer Science 140 or equivalent. 3 units. *Agarwal*

**242. Logic for Computer Science.** Aspects of logic with a focus on computational issues. Topics include propositional and predicate calculi and the theory underlying their automation, that is, the compactness theorems, the Herbrand-Skolem-Gödel theorem, unification, and resolution. Proof procedures and their search characteristics. The use of natural deduction and sequent calculi in describing logics, specifying programming language semantics and formalizing type systems. Structural properties, such as cut-elimination, in such systems. The logical systems underlying programming lan-

guages like Prolog and ML. Applications of logic in automated reasoning, program verification and synthesis. Not open to students who have taken CPS 218 before fall 1994. C-L: Philosophy 210. 3 units. *Loveland*

**\*250. Numerical Analysis.** Error analysis, interpolation and spline approximation, numerical differentiation and integration, solutions of linear systems, nonlinear equations, and ordinary differential equations. Not open to students who have taken Computer Science 221. Prerequisites: knowledge of an algorithmic programming language, intermediate calculus including some differential equations, and Mathematics 104. C-L: Mathematics 221 and Statistics 273. 3 units. *Greenside or Rose*

**252. Numerical Methods for Partial Differential Equations.** Survey of theory, algorithms, and codes for the numerical solution of nonlinear partial differential equations of initial value and boundary value type. Topics include finite-difference, spectral, and finite-element representations; stability of time-discretization techniques; adaptive spatial meshes; multigrid and preconditioned conjugate gradient techniques; solution on parallel computers. Not open to students who have taken Computer Science 222 before fall 1994. Prerequisite: Computer Science 221 or 250. C-L: Mathematics 222. 3 units. *Greenside or Rose*

**254. Numerical Linear Algebra.** Solution of large, sparse linear systems of equations. Storage schemes, graph theory for sparse matrices, different orderings to minimize fill, block factorizations, iterative methods, analysis of different splittings, conjugate gradient methods. Eigenvalue problems, QR factorization, Lanczos method, power method and inverse iteration, Rayleigh quotient. Not open to students who have taken Computer Science 223 before fall 1994. Prerequisite: Computer Science 221 or 250 or equivalent. C-L: Mathematics 223. 3 units. *Rose or Sun*

**260. Introduction to Computational Science.** Introduction for students and faculty to computing resources that facilitate research involving scientific computing: contemporary computers, programming languages, numerical software packages, visualization tools, and some basic issues and methods for high performance algorithm design. Prerequisite: programming experience in Fortran or C, calculus, numerical linear algebra or equivalent. 3 units. *Greenside, Rose, or Sun*

**264. Nonlinear Dynamics.** Introduction to the mathematical theory of nonlinear dynamics, and how this theory compares with physical experiments, with applications to biology (Turing states and morphogenesis), computer science (randomness and computability), mathematics (chaos and strange attractors), and physics (pattern formation and transition to turbulence). Not open to students who have taken Computer Science 213. Prerequisites: Computer Science 8 or 53, Mathematics 111, and Physics 51L, 52L. C-L: Physics 213. 3 units. *Behringer or Greenside*

**266. Communication, Computation, and Memory in Biological Systems.** Communication and memory in biological systems: voltage sensitive ion channels, hormone-receptor interactions, and initiation and control of RNA/DNA synthesis. Models of signaling and memory are developed and related to electronic signaling schemes. Not open to students who have taken the former Computer Science 228. Prerequisites: Computer Science 100 or 103, two semesters of college chemistry, and four semesters of college mathematics. 3 units. *Starmer*

**\*270. Artificial Intelligence.** Heuristic versus algorithmic methods; programming of games such as chess; theorem proving and its relation to correctness of programs; readings in simulation of cognitive processes, problem solving, semantic memory, analogy, adaptive learning. Not open to students who have taken Computer Science 215. Prerequisite: Computer Science 100 or 103 or consent of instructor. 3 units. *Biermann or Loveland*



**274S. Computational Linguistics Seminar.** Readings and research seminar on topics related to the processing of English or other natural languages: syntax, semantics, pragmatics, discourse, and others. Not open to students who have taken Computer Science 216S. Prerequisite: Computer Science 215 or 270 or consent of instructor. 3 units. *Biermann*

**291. Reading and Research in Systems.** 3 units. *Staff*

**292. Reading and Research in Algorithms and Complexity.** 3 units. *Staff*

**293. Reading and Research in Scientific Computing.** 3 units. *Staff*

**294. Reading and Research in Artificial Intelligence.** 3 units. *Staff*

**296. Advanced Topics in Computer Science.** Not open to students who have taken Computer Science 265. 3 units. *Staff*

### **For Graduates**

**300. Computer Science Research Seminar.** The course is designed to orient first-year graduate students and to provide an in-depth look at the research projects going on in the department. The course also emphasizes the necessary skills for research investigation and presentation in computer science. In particular, instruction is given in how to formulate research problems or projects, identify goals, and present results. (Concentration on the problem-solving aspect of research is the focus of the research project or thesis during the following semester.) Students will make and critique technical presentations, both oral and written. Not open to students who have taken Computer Science 303. 3 units. *Vitter*

**310. Topics in Operating Systems.** Not open to students who have taken Computer Science 332. 3 units. *Staff*

**320. Advanced Topics in Digital Systems.** Not open to students who have taken Computer Science 308. Prerequisite: Electrical Engineering 252 or equivalent. See C-L: Electrical Engineering 352. 3 units. *Staff*

**322. Advanced VLSI Design.** Theory of advanced VLSI design. Specifications development, methodology, issues, circuit-level trade-offs. Full custom design, standard cell design, gate array design, silicon compilation. Semiconductor technologies and logic families for semi-custom design. Clocking schemes and distribution, race conditions. Design of a variety of circuits (adders, I/O drivers, RAM, FIFO, etc.) Testing of all phases in the life cycle of an integrated circuit. Top-down design and bottom-up implementation. Student projects. Not open to students who have taken Computer Science 310 before Fall 1994. Prerequisite: Electrical Engineering 261 or equivalent. C-L: Electrical Engineering 361. 3 units. *Kedem*

**327. Seminar in Computer Systems Analysis.** Topics in computer systems analysis, especially for fault-tolerant systems, including reliability, availability and performance analysis, comparative analysis of architectures, performability, analytic and numerical solution techniques, stochastic Petri nets, simulation. Not open to students who have taken Computer Science 381. 1 to 3 units. Variable credit. *Trivedi*

**331. Operating Systems Theory.** Advanced study of theoretical aspects of operating systems emphasizing models and control of concurrent processes, processor scheduling, and memory management. Prerequisites: Computer Science 226 and 231. 3 units. *Ellis or Wagner*

**340. Theory of Computation.** Not open to students who have taken Computer Science 325. 3 units. *Staff*



**350. Topics in Numerical Mathematics.** Advanced topics in numerical mathematics to be selected from areas of current research. Not open to students who have taken Computer Science 321. Prerequisites: Computer Science 250 and 252. 3 units. *Greenside, Rose, or Sun*

**364. Advanced Topics in Nonlinear and Complex Systems.** Survey of current research topics that may include: advanced signal analysis (wavelets, Karhunen-Loeve decomposition, multifractals), bifurcation theory (amplitude and phase equations, symmetry breaking), spatio-temporal chaos, granular flows, broken ergodicity, complexity theory of dynamical systems, and adaptive systems (genetic algorithms, neural networks, artificial life). Emphasis on quantitative comparisons between theory, simulations, and experiments. Not open to students who have taken Computer Science 313. Prerequisites: Computer Science 264 or Physics 213; recommended: Physics 230, 231, and 303 or equivalents. C-L: Physics 313. 3 units. *Behringer, Greenside, or Palmer*

**370. Seminar in Artificial Intelligence.** Topics in artificial intelligence, such as natural language understanding, learning, theorem proving and problem solving, search methodologies. Topics will vary from semester to semester. Includes research literature reading with student presentation. Not open to students who have taken Computer Science 382. 1 to 3 units. Variable credit. *Staff*

**376. Advanced Topics in Artificial Intelligence.** Course content will vary from year to year and will include a detailed study of one or more of the following: mechanical theorem proving, natural language processing, automatic program synthesis, machine learning and inference, representations of knowledge, languages for artificial intelligence research, artificial sensorimotor systems, and others. Not open to students who have taken Computer Science 315. Prerequisite: Computer Science 270. 3 units. *Biermann or Loveland*

**391. Internship.** Student gains practical computer science experience by taking a job in industry, and writes a report about this experience. Requires prior consent from the student's advisor and from the director of graduate studies. Pass/fail grading only. May be repeated with consent of the advisor and the director of graduate studies. 1 unit. *Staff*

**395. Research.** Instruction in methods used in the investigation of original problems. Individual work and conferences. 1 to 6 units. Variable credit. *All members of the graduate staff*

**399. Special Readings.** Variable credit. *Staff*

## COURSES CURRENTLY UNSCHEDULED

**256. Functional Analysis for Scientific Computing**

**326. Systems Modeling**

**337. VLSI Algorithmics**

## SUPPLEMENTARY COURSES OFFERED AT UNC-CH

**Comp 145. Software Engineering Laboratory**

**Comp 171. Natural Language Processing**

**Comp 230. File Management Systems**

**Comp 236. Computer Graphics**

**Comp 238. Raster Graphics**

## Comp 254. Picture Processing and Pattern Recognition

## Comp 265. Architecture of Computers

# Cultural Anthropology

Professor O'Barr, *Chair*; Associate Professor Silverblatt, *Director of Graduate Studies*; Professors Apte, Mudimbe (literature), O'Barr, and Reddy (history); Associate Professor Quinn; Assistant Professors Allison, Baker, Ewing, Litzinger, Starn, Strauss, and Tetel (English); Professors Emeriti Friedl and La Barre; Assistant Research Professor Chandler (English); Assistant Professor of the Practice Luttrell; Adjunct Professor Conley

The department offers graduate work leading to the Ph.D. degree in cultural anthropology. It also participates in a program with the law school leading to a joint J.D./M.A. degree. Students are expected to take an active role in development of their own research goals and design of their own plan of study, as well as their pursuit of relevant cross-disciplinary background, within and outside the department. Courses are required in anthropological theory and research methodology, as well as spoken and/or written competence in at least one foreign language, at the level appropriate to the planned research program. The core courses include two year-long sequences: Theories in Cultural Anthropology (330S, 331S), required of first-year graduate students, and Research Seminar in Cultural Anthropology (332S, 333S), required in the fourth and fifth semesters. Students must also take an approved methods course. Summer field research is strongly encouraged. The *Guidelines for Graduate Students in the Doctoral Program in Cultural Anthropology* and the *Guidelines for Graduate Students in the J.D./M.A. Program* fully describe these and additional requirements and the detailed steps in the student's graduate career.

### For Seniors and Graduates

**201S. Marxism and Anthropology.** The interaction of Marxist and anthropological theory over the last half century; particular attention to evolution, historical transformation, mode of production, labor processes, culture, ideology, and consciousness. 3 units. *Strauss*

**207S. Anthropology and History.** Recent scholarship that combines anthropology and history, including culture history, ethnohistory, the study of mentalité, structural history, and cultural biography. The value of the concept of culture to history and the concepts of duration and event for anthropology. Prerequisite: major in history, one of the social sciences, or comparative area studies; or graduate standing. C-L: History 210S. 3 units. *Reddy*

**208S. Postcolonial Anthropology.** Interdisciplinary approach to the review and critique of postcolonial ethnography and historiography. How postcolonial scholarship questions historical modes of cultural ordering and representation and envisions new modes of reading and writing in relation to global structures of domination. 3 units. *Ewing, Litzinger, Silverblatt, or Starn*

**210S. Ideology and the Image in Ethnographic Film.** Overview of the history of ethnographic film. Emphasis placed on knowledge of the film canon, recent innovations in ethnographic documentation, and critical skills for understanding the political and epistemological quandaries of representation. Topics such as narrativity, authorship, spectatorship, and psychoanalytic and feminist film criticism explored in relation to ethnographic film theory and practice. 3 units. *Litzinger*

**214. Postmodernism and the Problem of Representation.** How postmodernism has shaped recent anthropological discourse. Analysis of the premises of postmodernist epistemology and identification of key issues such as truth, authority, and power that

are raised by postmodernist critiques of ethnographic representation. Examination of both traditional and experimental ethnographies. 3 units. *Ewing*

**215S. The Anthropology of Gender: Theoretical Issues.** Topics to be selected each semester from: feminist theory and anthropology; Marxism and feminism; gender, ideology, and culture; gender and colonialism; gender and the third world; and others. C-L: Women's Studies. 3 units. *Allison, Luttrell, Quinn, Silverblatt, or Starn*

**216S. Gender, Race, and Class.** Gender, race, and class as theoretical constructs and lived experiences. Analytical frameworks include social history, discourse analysis, critical theory, cultural studies, and feminist theories. Consent of instructor required. 3 units. *Luttrell*

**217. Culture Versus Nature? History and Ecology in Anthropology.** Historical and evolutionary approaches to the ways that human cultures and natural environments have modified and constrained one another; focus on technologies rather than on national or international environmental policy. Consent of instructor required. 3 units. *Staff*

**220S. Theoretical Bases of Social Interpretation.** See C-L: History 290S. 3 units. *Reddy*

**229S. Historical and Anthropological Approaches to Emotions.** See C-L: History 229S. 3 units. *Reddy*

**234S. Political Economy of Development: Theories of Change in the Third World.** See C-L: Political Science 234S; also C-L: History 234S and Sociology 234S. 3 units. *Staff*

**250S. Culture and Discourse.** Theoretical approach to culture and methods for the investigation of culture through analysis of discourse, especially interview texts. Application of this approach and these methods to the study of a domain of American culture. 3 units. *Apte, Ewing, O'Barr, Quinn, or Strauss*

**251. Cognitive Anthropology.** A cognitively-based theory of culture, its history, justification, substantiation through discourse analysis, application to everyday understanding, feeling and motivation, and implications for the acquisition of culture, cross-cultural variation and cultural universals in human thought. Not open to students who have taken Cultural Anthropology 151. 3 units. *Quinn or Strauss*

**255. Anthropology as Public Discourse.** The historic role of science in general and anthropology in particular in shaping U.S. public discourse on culture, immigration, race, and ethnicity. Anthropological texts within their historical and political contexts; how policy experts, pundits, legislators, and others appropriate anthropological ideas for specific agendas. C-L: African and Afro-American Studies 255. 3 units. *Baker or Strauss*

**258S. Theories of Symbolism.** Influential interpretations of symbols, what they do, and how they do it. The relationship of language to symbolism and symbolism to power. Prerequisites: junior/senior status and at least two courses in cultural anthropology, or graduate standing. 3 units. *Ewing*

**261. Religion: Tradition and Cultural Innovation.** Analysis of anthropological approaches to religion, with an emphasis on how these theories account for conflict and change as they are manifested in religious symbols and ritual action. 3 units. *Ewing or Piot*

**262S. Anthropology and Folklore.** Origins, conceptualizations and theoretical orientations, methodology, and subject matter of the discipline of folklore and exploration of its similarities with and differences from sociocultural anthropology. 3 units. *Apte*



**263. The Bestseller: Cultural Populism in the 1990s' China.** See C-L: Asian and African Languages and Literature 259; also C-L: Literature 279. 3 units. *Wang*

**265S. Anthropological Approaches to Life History.** Form and function of life history and its linkages to sociocultural systems; methodology for collecting life history in ethnographic fieldwork; textual, social-structural, and interpretive analyses of life history. 3 units. *Apte*

**270S. Non-Western Indigenous Anthropology.** An examination of the development of indigenous anthropology in non-Western societies with a focus on the theoretical, methodological, and ideological orientations of its practitioners in the context of nationalism, neo-colonialism, and globalization. 3 units. *Apte*

**279S. Race, Racism, and Democracy.** The paradox of racial inequality in societies that articulate principles of equality, democratic freedom, and justice for all. C-L: African and Afro-American Studies 279S. 3 units. *Baker*

**280S, 281S. Seminar in Selected Topics.** Special topics in methodology, theory, or area. Consent of instructor required. 3 units each. *Staff*

**282S. Canada.** See C-L: History 282S; also C-L: Economics 282S, Political Science 282S, and Sociology 282S. 3 units. *Staff*

**288S. Seminar in Asian and African Cultural Studies.** See C-L: Asian and African Languages and Literature 200S; also C-L: Literature 200S. 3 units. *Staff*

**290. Research Methods in Japanese.** Consent of instructor required. See C-L: Japanese 291; also C-L: History 292, Political Science 291, and Sociology 291. 3 units. *Staff*

#### **For Graduates**

**330S, 331S. Theories in Cultural Anthropology.** A two-semester seminar in which the historical development of the field and its modern currents and debates are examined and discussed. Particular topics to be chosen by the instructors. 3 units each. *Staff*

**332S-333S. Research Seminar in Cultural Anthropology.** Yearlong individual projects, from research design and proposal writing through summer field research, to data analysis, theory development, and write-up as publishable papers. Approaches, methods, and lessons appropriate to these projects. 6 units. *Staff*

**380S. Advanced Selected Topics.** Special topics in methodology, theory, or area. Consent of instructor required. 3 units. *Staff*

**393. Individual Research in Cultural Anthropology.** Supervision and guidance of A.M. thesis preparation, Ph.D. dissertation preparation, or other intensive research on a selected problem. 3 units. *Staff*

#### **COURSES CURRENTLY UNSCHEDULED**

**206S. Anthropological Controversies**

**211S. Ethnography of Communication**

**219. Language and Social Theory**

**239. Culture and Ideology**

**272S. Marxism and Feminism**

# Program for the Study of Developed Shorelines

Orrin Pilkey, Ph.D., *Director*

The Program for the Study of Developed Shorelines was established in recognition of a critical need for both academic programs and geological research on national coastal issues. The goal of the program is promotion of research, education, and publication concerned with oceanic shorelines already under development. A limited number of graduate research fellowships are available to both M.S. and Ph.D. candidates and postdoctoral support is available for individuals involved in appropriate research. The program is centered both within the Department of Geology and the School of the Environment. Fellows supported by the program must satisfy all departmental requirements. For more information contact Professor Orrin Pilkey, Director, Program for the Study of Developed Shorelines, Department of Geology, Duke University, Box 90228, Durham, North Carolina 27708-0228.

## Economics

Professor de Marchi, *Chair* (215A Social Sciences); Professor Graham, *Director of Graduate Studies* (238 Social Sciences); Professors Clotfelter, Cook, Goodwin, Grabowski, Kelley, Kimbrough, Ladd, McElroy, Moulin, Sloan, Smith, Tauchen, Tower, Trembl, Vernon, Weintraub, and Yohe; Associate Professors Conrad, Kramer, Leitzel, and Zhou; Assistant Professors An, Coppejans, Crawford, Hamilton, Peretto, Ramachandran, Sieg, Vettas, and Yang; Professors Emeriti Blackburn, Bronfenbrenner, Davies, Kreps, and Wallace; Research Professor Burmeister; Adjunct Professor Gallant; Adjunct Associate Professor Zarkin; Visiting Professor Toniolo

The Department of Economics offers graduate work leading to the A.M. and Ph.D. degrees. Among the undergraduate courses of distinct advantage to the graduate student in economics are statistics, economic theory, and basic courses in mathematics and social sciences other than economics. Advanced work in mathematics or statistics is very useful.

Requirements for the Ph.D. degree in economics include courses in economic theory and econometrics in the first year. By the beginning of the third year, the student must have passed a core examination in economic analysis. In addition, a student must obtain certification in three fields, one of which may be in an outside minor. The student may select from advanced economic theory, health economics, history of political economy, economic development, economic history, international economics, money and banking, labor economics, public finance, industrial organization, econometrics, Soviet economics, and certain fields outside the economics department (e.g., finance, resource and environmental economics, statistics, or demography). Course work for the Ph.D. degree should be completed in five or six semesters of residence.

### For Seniors and Graduates

**205S. Advanced Monetary Theory and Policy.** The theory of monetary policy from Keynesian, neoclassical and classical perspectives. Public choice and political economy approaches to monetary policy. The term structure interest rates. Portfolio theory. The theory of the financial services firm. Theories of financial regulatory policy. Prerequisites: Economics 153 and Statistics 110B. 3 units. *Staff*

**206S. Regulation and Industrial Economics.** Analysis of industrial competition and performance in industries such as automobiles, telephones, cable TV, airlines, pharmaceuticals, tobacco, and health care services. Analysis of the efficiency of regulation and other public policy programs. Prerequisites: Economics 149 and statistics. 3 units. *Grabowski*

**207. Models of Conflict and Cooperation.** Cooperative and noncooperative game theory with applications to trading, imperfect competition, cost allocation, and voting. Prerequisites: Economics 149 and Mathematics 26L or 31 or 31L. 3 units. *Moulin*

**208S. Economics of the Family.** Economic functions of families including home production gains from marriage, the demand for children, marriage and divorce, child support and alimony, labor supplies of women and men, the distribution of resources within families ("rotten kid theorems" and cooperative and noncooperative games). Applications to marriage and divorce law, day care, U.S. welfare policy, mortality, and farm efficiency in developing nations. Prerequisites: Economics 149 and Statistics 110B. 3 units. *McElroy*

**215S. Applied Cost Benefit Analysis.** The principles of economic cost benefit analysis applicable to circumstances in which market valuations do not provide adequate measures of social desirability. Socially relevant prices for labor, capital, energy, materials, foreign exchange, and valuation of public goods. Development of analysis for individual projects, extended to cover economic policies. Prerequisite: Economics 149. 3 units. *Staff*

**216S. Economics of Education.** Topics include investment in human capital, return to and demand for education, the production function for schooling, public expenditures on schools, effectiveness of private and public schools, the distribution of public educational expenditures, public financing of higher education, inflation in college costs, and labor markets for teachers and professors. Emphasis on students' research projects. Prerequisite: Economics 149 or Public Policy Studies 110. C-L: Public Policy Studies 216S. 3 units. *Clotfelter*

**218. Macroeconomic Policy.** Does not count for undergraduate economics major requirements. See C-L: Public Policy Studies 218. 3 units. *Leitzel or McElroy*

**219S. Economic Problems of Underdeveloped Areas.** Analysis of underdeveloped countries with attention to national and international programs designed to accelerate development. Prerequisite: Economics 149 or consent of instructor. 3 units. *Kelley or Wallace*

**220S. Computer Modeling for Policy Analysis.** Introduction to the use of computer techniques in economic policy evaluation; policy applications to international economics, public finance and development economics; computer analysis of linearized and nonlinear models. Students required to complete a major modeling project. Prerequisites: Economics 149 and Economics 154. 3 units. *Tower*

**225S. Games and Information.** Noncooperative game theory with emphasis upon incomplete/imperfect information and incentive contracting. Applications to insurance (deductibles, coinsurance), labor (piece rates, sharecropping, profit sharing), real estate (commission sales), and law (contingent contracts). Prerequisites: Economics 149 and Statistics 110B. 3 units. *Graham*

**234. Japanese Economy and Its History.** Japanese economic development since the end of isolation, in the mid-nineteenth century. Not open to students who have had Economics 134. Prerequisite: one course in economics or Far Eastern history. 3 units. *Bronfenbrenner*

**239. Introduction to Econometrics.** Data collection, estimation, and hypothesis testing. Use of econometric models for analysis and policy. (Same as Economics 139 but requires additional term paper; not open to students who have taken Economics 139.) Prerequisites: Economics 2 or 52 and Mathematics 32 or equivalent and Statistics 110B. 3 units. *McElroy, Sieg, Tauchen, or Wallace*



**240. Comparative Economic Systems.** Analysis and comparison of basic economic systems; market versus centrally planned economies; decision making, information, property rights (income and control), and incentives. Western industrialized market economies compared with Soviet-type command economies. Analysis of change, reforms, and of economic problems of systems transformation. Not open to students who have taken Economics 140. Prerequisites: Economics 1 or 51, and 2 or 52. 3 units. *Trembl*

**242S. Chinese Economy in Transition.** Evolution of the Chinese economy since 1949. Exposition of alternative economic systems, the commune, incentive problems and state enterprises. Analysis of recent reforms and their effects on economic efficiency: agricultural growth, changes in ownership structures, financial markets, reforms and inflation, privatization, gradualism and shock treatment. Through a research project students develop expertise in one aspect of the Chinese economy. (Same as Economics 142S but requires additional paper; not open to students who have taken Economics 142 or 142S.) Prerequisites: Economics 1 or 51, and 2 or 52. C-L: Public Policy Studies 242S. 3 units. *Yang*

**244. Education, Development, and Growth.** The basic elements of human capital theory and its application to economic growth and development. Topics include human capital investment, life-cycle earnings, impact of education on farm efficiency, migration, national income accounting, and models of endogenous growth. Data from the United States and other countries are used to test theoretical implications. (Same as Economics 144 but requires additional work; not open to students who have taken Economics 144.) Prerequisites: Economics 149, Economics 154, and Statistics 110B. 3 units. *Yang*

**248. History of Economic Thought.** Approaches to economic problems from Aristotle to Keynes, emphasizing certain models and doctrines—their origins, relevance, and evolution. Readings from Mun, Quesnay, Adam Smith, Malthus, Ricardo, Marx, Walras, Veblen, and Keynes. (Same as Economics 148, but requires additional paper; not open to students who have taken Economics 148 or 150.) Prerequisites: Economics 1 or 51 and 2 or 52. 3 units. *De Marchi or Goodwin*

**249. Microeconomics.** Cost and supply considerations in price theory; the demand for factors of production. The allocation of resources in the context of competitive and monopolistic market structures. (Similar to Economics 149 but at a more advanced level; not open to students who have taken Economics 149.) 3 units. *Graham, Trembl, or Vernon*

**250S. Modern Economic Thought.** Selective survey of themes in economic thinking since 1936, including the role of empirical work and of formalization. Prerequisites: Economics 149, 154, and Statistics 110B or consent of instructor. 3 units. *De Marchi or Weintraub*

**251S. Regulation of Vice and Substance Abuse.** Prerequisite: Economics 149 or Public Policy Studies 110. See C-L: Public Policy Studies 251S. 3 units. *Cook*

**253. Econometric Methods.** Econometric and statistical methods for applied economic research. Topics include multivariate regression, hypothesis testing, mean square error criteria, and related subjects. Prerequisites: Economics 139 or 239, Economics 149, or equivalents. Calculus and matrix algebra recommended. 3 units. *Wallace*

**254. Macroeconomics.** Concepts and measurement of national income and expenditures, employment, interest rates, and price levels; the theoretical determination of these aggregates; applications of macroeconomic theory to business cycles and economic growth. (Similar to Economics 154 but at a more advanced level; not open to students who have taken Economics 154.) 3 units. *De Marchi, Kimbrough, or Yohe*

**254L. Macroeconomics.** Same as Economics 254, except includes a weekly computer lab. Microsoft Excel used to estimate economic models using regression analysis and to

simulate linearized economic models using matrix methods. Similar to Economics 154L but at a more advanced level; not open to students who have taken Economics 154, 154L, or 254. 3 units. *Tower*

**257S. Business Cycles and Economic Forecasting.** Causes of fluctuations in economic activity and conventional methods of forecasting micro- and macroeconomic variables, using microcomputer programs. (Similar to Economics 157S, but requires an additional assignment. Not open to students who have taken Economics 157S.) 3 units. *Staff*

**258. Financial Markets and Investments.** The tools learned in microeconomics, macroeconomics, basic mathematics, and statistics applied to problems in financial economics. A blend of pure economic theory, an investigation of financial data, and practical applications using personal computers. Not open to students who have had Economics 158. Prerequisites: Economics 149, Economics 154, and a statistics course—preferably Statistics 110 or 210. 3 units. *Burmeister or Coppejans*

**259S. State and Local Public Finance.** Prerequisite: Public Policy Studies 217 or equivalent. See C-L: Public Policy Studies 259S. 3 units. *Ladd*

**260. Economic Policy Analysis of Nonrenewable Resources.** Prerequisite: Economics 149, Public Policy Studies 110, or Public Policy Studies 232. See C-L: Public Policy Studies 260. 3 units. *Conrad*

**261. Evaluation of Public Expenditures.** Not open to students who have taken Economics 285. See C-L: Public Policy Studies 261; also C-L: Environment 272. 3 units. *Conrad*

**262S. Seminar in Applied Project Evaluation.** Prerequisite: Economics 285 or Public Policy Studies 261. See C-L: Public Policy Studies 262S. 3 units. *Conrad*

**263. Environmental Economics: Theory and Application.** Role of materials and energy balances in modeling production and consumption; externalities and Pigouvian taxes; property rights and open access resources; role of market structure; design of policy instruments and actual practice; contrasts between domestic and international environmental policies. Prerequisite: Economics 149. C-L: Environment 263. 3 units. *Smith*

**265. International Economics.** Fundamental principles of international economic relations. The economic basis for international specialization and trade, the economic gains from international trade and investment, the balance of payments, international finance, and the international monetary system. Prerequisites: Economics 149 and 154. 3 units. *Bronfenbrenner, Kimbrough, or Tower*

**266S. Current Issues in International and Development Economics.** Emphasis on individual research projects. Prerequisites: Economics 149 and Economics 154. 3 units. *Kimbrough or Tower*

**267. Multinational Management.** Economic, political, and legal variables which influence the form of organization. Multinational enterprise and foreign direct investment. Prerequisite: Economics 149. 3 units. *Staff*

**269. Microeconomic Analysis.** The basic tools for using microeconomic analysis to address practical economic problems. Topics include consumption, production, externalities, partial equilibrium, and general equilibrium. Applications drawn from labor markets, public goods, cost/benefit analysis, and optimal taxation. The level of the course is between intermediate microeconomics (Economics 149/249) and the core Ph.D. microeconomics sequence (Economics 301/302). 3 units. *Yang*

**270L. Resource and Environmental Economics.** Includes laboratory. Prerequisite: introductory course in microeconomics. See C-L: Environment 270L; also C-L: Public Policy Studies 272L. 4 units. *Kramer*

**271S. Behavioral and Experimental Economics.** The relationship between actual behavior and economic models. Topics include individual decision-making behavior, game theory, and the role of market institutions. The interaction of economic and psychological theory. Students will have the opportunity to participate in, and conduct, economic experiments. (Same as Economics 171 but requires an additional paper; not open to students who have taken Economics 171.) Prerequisite: Economics 149 or consent of instructor. 3 units. *Staff*

**272. Economic Analysis of Resource and Environmental Policies.** Prerequisite: Environment 270L or equivalent; Economics 149 recommended. See C-L: Environment 271. 3 units. *Staff*

**273. Economics of Organization and Management.** Coordination and motivation issues within a corporation along with the internal design and dynamics of organizations. Topics include the structure of employment contracts, performance incentives, and the pricing of financial assets. (Same as Economics 173 but requires additional paper; not open to students who have taken Economics 173.) Prerequisite: Economics 149. 3 units. *Staff*

**275. Economics of Modern Latin America.** The remarkable shift that has taken place in various countries of Latin America from a statist, import substitution model of development towards a more free-market economy. Emphasis on case studies of individual countries and specific policies including opening markets to foreign trade and investment, privatization, deregulation, creation of private pension systems, and building greater transparency in financial markets. The end of Latin American debt crises and prospects for hemispheric integration. (Same as Economics 175, but requires an additional paper; not open to students who have taken Economics 175.) Prerequisites: Economics 1 or 51 and 2 or 52; or consent of instructor. 3 units. *Staff*

**280S. Fundamentals of Political Economy.** See C-L: Political Science 270S. 3 units. *Aldrich or Niou*

**281. Corporate Finance.** Same as Economics 181, but requires an additional paper; not open to students who have taken Economics 181. 3 units. *Staff*

**282S. Canada.** See C-L: History 282S; also C-L: Cultural Anthropology 282S, Political Science 282S, and Sociology 282S. 3 units. *Staff*

**283. Agency and Accounting.** The production and use of information in corporate decision making and financial markets. The theory of principals and agents. The relationship between the structure of information flows and incentives within the firm and the impact of that relationship on the firm's operations, organizational form, capital structure, and compensation scheme. How the dissemination of information in capital markets affects asset pricing, financial contracting, and corporate governance. (Same as Economics 183, but requires additional paper. Not open to students who have taken Economics 183.) Prerequisite: Economics 149/249 or 181. 3 units. *Staff*

**284S. American Financial Development and History.** Development of American financial institutions and markets from the colonial period to the present. The political, economic, and institutional factors which influenced that evolution and the theoretical implications for contemporary emerging markets. Prerequisite: Economics 181 or consent of instructor. 3 units. *Staff*

**286S. Economic Policy-Making in Developing Countries.** See C-L: Public Policy Studies 286S. 3 units. *Conrad or Ramachandran*



**287. Public Finance.** Economic aspects of the allocative and distributive role of government in the economy, the incidence and efficiency of taxation, the effects of taxation on behavior, and analysis of major government spending programs. Not open to students who have had Economics 187. (Taught concurrently with Economics 187 but requires additional graduate-level work.) Prerequisite: Economics 149. 3 units. *Sieg*

**288S. Current Issues in United States Federal Tax Policy.** Evaluation of the equity and efficiency of United States tax policy. Topics include: (1) personal consumption versus income taxation and (2) restructuring the taxation of corporate income. Emphasis on the effects of taxes on savings, investment, and the international economy. Prerequisite: Economics 149 or consent of instructor. C-L: Public Policy Studies 288S. 3 units. *Sieg*

**292S. Issues in the Transition of Economic Systems.** 3 units. *Leitzel*

**293S. Soviet Economic History.** From 1917 through the present. Foundations of the command economy—rejection of markets, central planning, industrialization, collectivization of agriculture; economic reforms and search for economic efficiency. Gorbachev's perestroika and the dissolution of the Soviet Union. 3 units. *Trem*

**294S. Soviet Economic System.** Economic planning and administration in the Soviet Union. Theoretical and applied problems of resource allocation, economic development, and optimal micro decision making in a nonmarket economy. Gorbachev's perestroika, search for a new model, and the collapse of the Soviet system. 3 units. *Trem*

**295, 296. Selected Topics in Economics.** 3 units each. *Staff*

**299. Political Philosophy and Distributive Justice.** Welfarism: classical utilitarianism versus egalitarianism (Harsanyi versus Rawls). Democratic rights: voting rules and preference aggregation (Arrow's theorem). Liberalism: competitive equilibrium, destructive competition, and inefficient decentralization. Welfarism versus resourcism. Mechanism design and the microeconomic approach to justice. (Similar to Economics 199, but requires an additional assignment. Not open to students who have taken Economics 199.) 3 units. *Moulin*

## **For Graduates**

**232. Microeconomics: Policy Applications.** Graduate status only. Prerequisites: Economics 149 or Public Policy Studies 110 or 217 and familiarity with regression analysis or concurrent enrollment in Public Policy Studies 231. See C-L: Public Policy Studies 232. 3 units. *Conrad or Ladd*

**301. Microeconomic Analysis I.** Review of contemporary theory relating to consumer choice, production, the firm, and income distribution in competitive and imperfectly competitive markets. Restricted to Ph.D. students in economics except with consent of instructor and director of graduate studies. 3 units. *Staff*

**302. Microeconomic Analysis II.** A continuation of Economics 301 with emphasis on analyses of consumer behavior, general equilibrium, welfare economics, and capital theory. Prerequisite: Economics 301. 3 units. *Graham or Zhou*

**303. Microeconomic Analysis III.** A discussion of the formal models of economic justice with the tools of cooperative games and social choice. Topics include cost-sharing formulas, fair division, natural monopolies, public goods, collective preferences and utilities, and implementation theory. Prerequisites: Economics 301 and 302. 3 units. *Moulin or Zhou*

**304. Advanced Macroeconomics.** Advanced topics in macroeconomics with some emphasis on computation and econometric analysis. Topics include real business cycle

theory, endogenous growth theory, monetary theory, optimal monetary and fiscal policy and time consistency. 3 units. *Kimbrough or Peretto*

**305. Monetary Theory and Policy.** Same topics as Economics 205S but with additional graduate level work. Prerequisite: Economics 304. 3 units. *Staff*

**309. Trade and Development Theory.** Theory of international trade and trade policy as it affects the structure and growth of individual economies, with emphasis on developing countries. Comparative advantage, factor proportions explanation of trade, infant industry and other arguments for protection, interactions of exchange rate and trade policy, and special issues relating to primary commodities are examined. 3 units. *Staff*

**311, 312. History of Political Economy.** A detailed review of the development of economic theory, the tools of economic analysis, and economics as a science, together with an analysis of the circumstances affecting this development. 3 units each. *De Marchi, Goodwin, or Weintraub*

**313, 314. Seminar in Economic Theory.** Prerequisite: Economics 301 or equivalent. 3 units each. *Graham or Weintraub*

**315. Noncooperative Game Theory.** A self-contained presentation of the main noncooperative concepts: dominant strategies, Nash equilibrium, subgame perfect equilibrium. Introduction to mixed and correlated strategies and the Bayesian equilibrium for games of incomplete information. Examples include oligopolistic competition, auctions, bargaining, and voting. C-L: Political Science 315 and Statistics 386. 3 units. *Moulin*

**316. Seminar in Economics of Soviet-Type Socialism.** Selected topics in analysis of theoretical and institutional framework of Soviet economic system, such as markets versus plan, optimizing techniques in planning, price determination, balanced economic development, and ideology and economic policy. 3 units. *Tremi*

**317. Development Economics I.** Historical, empirical, and theoretical topics in development economics. 3 units. *Kelley*

**318. Quantitative Development Economics.** Selected topics in development economics with emphasis on empirical techniques. Topics include economic growth, income distribution, labor markets, human capital fertility, health, and their relationship with structural adjustment. 3 units. *Staff*

**319. Seminar in the Theory and the Problems of Economic Growth and Change (Development Economics II).** Links between aid, financial markets, and real investment in an open economy stressing tariff protection and capital controls (internal and external). Economic policy-making using market solutions and/or planning models (input-output, linear programming, and computable general equilibrium). 3 units. *Staff*

**320. Macroeconomic Analysis I.** Intertemporal models of consumption and labor supply; implications of these models for the behavior of macroeconomic aggregates, fiscal policy, and monetary policy; money demand and inflation; economic growth. Restricted to Ph.D. students in economics except with consent of instructor and director of graduate studies. 3 units. *Kimbrough or staff*

**322. Macroeconomic Analysis II.** Further analysis of topics treated in Economics 320. Optimal economic growth; business cycles. Issues in economic policy. Prerequisite: Economics 320. 3 units. *Kimbrough or Peretto*

**326. Stochastic Macroeconomics.** Advanced topics in macroeconomics with an emphasis on empirical macroeconomics and the interrelationship between economic theory and empirical work in macroeconomics. Topics include the interpretation of



macroeconomic time series, formulating and testing models of asset pricing and market efficiency, solution and estimation of rational expectations models, vector autoregression models, and policy evaluation with empirical macroeconomic models. 3 units. *Staff*

**329. Public Economics I.** Analysis of normative and positive models of the incidence and efficiency of taxation, and the effects of taxation on individual and firm behavior. 3 units. *Staff*

**330. Public Economics II.** Public expenditure analysis including the analysis of externalities, benefit assessment, and risk and uncertainty. 3 units. *Sieg*

**341. Quantitative Methods.** Various topics in linear algebra, advanced calculus, real analysis, statistics, econometrics, and computer programming, as relevant for Ph.D. level work in economics. Restricted to Ph.D. students in economics except with consent of instructor and director of graduate studies. Prerequisites: Economics 149 and 154; Mathematics 103, 104, or equivalent. 3 units. *Sieg or Tauchen*

**344. Econometrics I.** Economic theory and statistics applied to analysis of economic phenomena. Matrix algebra and calculus used to develop methods for multiple regression and statistical inference. Prerequisite: Economics 241, 249, or equivalents. 3 units. *Tauchen*

**345. Applied Econometrics.** Applications of current econometric methodology to empirical problems with an emphasis on applied microeconomics. Topics include limited dependent variable, longitudinal and panel data analysis, and duration models. Prerequisites: Economics 341 and 344. 3 units. *An, Crawford, or Sieg*

**347. Econometrics II.** Asymptotic theory for finite dimensional parametric models. Topics include nonlinear maximum likelihood, nonlinear regression, extremum estimators, aspects of computation, hypothesis testing, and models with limited dependent variables. Prerequisite: Economics 344. 3 units. *An, Coppejans, or Tauchen*

**348. Econometrics III.** Advanced topics in econometrics including asymptotic theory, nonparametrics, and specification testing. Prerequisite: Economics 347. 3 units. *An, Gallant, or Tauchen*

**349. Financial Econometrics.** Advanced topics in econometrics adapted for use in formulating and estimating financial models. Emphasis is primarily on time series techniques, including the Generalized Method of Moments (GMM), Autoregressive Conditional Heteroskedasticity (ARCH), Semiparametric Methods (SNP), Efficient Method of Moments (EMM), Indirect Estimation, and some nonparametric methods. Prerequisites: Economics 304 and 347, or equivalent course work with consent of instructor. 3 units. *Tauchen*

**355. Seminar in Labor Economics.** 3 units. *McElroy*

**356. Graduate Health Economics I.** Survey course designed for students considering Ph.D. research in health economics. Topics will include demand for health insurance, moral hazard, health as an investment, technological change, the principal-agent problem, occupational entry, and the supply of physician services. Prerequisites: Economics 243 and 301. 3 units. *Sloan*

**357. Seminar in Health Economics.** Conceptual and empirical analysis of demand for health, medical services, and insurance; decisions by physicians and hospitals about price, quantity, and quality of services; technological change; and structure and performance of the pharmaceutical industry. Prerequisites: Economics 243 and 301. 3 units. *Sloan*

**358. Seminar in Labor Market and Related Analysis.** A survey of several topics in modern labor economics including human capital, signaling, static and dynamic labor



supply, household production, labor contracts, search, the theory of equalizing differences, and discrimination. 3 units. *Yang*

**359. Economic Analysis of Legal Issues.** An exploration of diverse topics in law and economics such as property rights and externalities, tort law and optimal accident prevention, bargaining and game theory, the economics of contracts, and theories of economic justice. 3 units. *Culp*

**363. Economics of Natural Resource Damage Assessment.** Topics vary each semester offered. C-L: Environment 363. 3 units. *Smith*

**365. Seminar in International Trade Theory and Policy.** 3 units. *Kimbrough or Tower*

**366. Seminar in International Monetary Theory.** 3 units. *Kimbrough*

**372. Advanced Theory of Environmental and Natural Resource Economics.** The application of economic concepts to private- and public-sector decision making concerning natural and environmental resources. Topics include modeling externalities and public goods, design of policy instruments, management of renewable and nonrenewable resources, welfare theory and valuation methods, and environmental risk. Prerequisites: Economics 301 and 302 or consent of instructor. C-L: Environment 372. 3 units. *Mansfield and Smith*

**373. Topics in Environmental and Natural Resource Economics.** Examination of current research in environmental and natural resource economics, building on the theory of environmental and natural resource economics developed in Economics/Environment 372. Includes selected topics from Economics/Environment 372 and other quantitative and theoretical issues pertinent to prevailing research in environmental economics. Prerequisite: Economics/Environment 372 or consent of instructor. C-L: Environment 373. 3 units. *Mansfield and Smith*

**380. Graduate Economics Workshops.** May be taken for multiple credit. Sections: .01 Industrial Organization and Regulation; .02 International Economics; .03 Labor Economics; .04 Macroeconomics; .05 Public Finance; .06 Economic Thought; .07 Corporate Economics; .08 Econometrics; .09 Economic Theory. 3 units each. Variable credit. *Staff*

**388. Industrial Organization.** Analysis of models of markets, especially oligopoly. Game theoretic models of entry deterrence and predation. Product selection and advertising and other selected topics. 3 units. *Crawford, Grabowski, Vettas, or Vernon*

**389. Seminar in Industrial and Governmental Problems.** Criteria for evaluating industrial performance. Antitrust, policy toward innovation, natural monopoly regulation, and regulation of selected industries. 3 units. *Crawford, Grabowski, or Vernon*

**390. Economics of Auctions, Procurements, and Bargaining.** Study of allocation mechanisms where offers are considered simultaneously and sequentially. Special emphasis on the distinction between allocation mechanisms from the viewpoint of sellers and buyers. 3 units. *Staff*

**395. Special Topics in Economics.** 3 units. *Staff*

**397, 398. Directed Research.** 3 units each. *Staff*

## COURSES CURRENTLY UNSCHEDULED

**207S. Models of Conflict and Cooperation**

**231S. Economic Development in Latin America**

**235. The Economics of Crime**

**307. Quantitative Analysis I**

**308. Quantitative Analysis II**

**321. Theory of Quantitative Economic Policy**

**323. Income Distribution Theory**

**324, 325. Economics of the Law**

**401. Seminar on the British Commonwealth**

**402. Interdisciplinary Seminar in the History of the Social Sciences**

## **RELATED COURSES IN OTHER DEPARTMENTS**

Courses in related fields may be selected from anthropology, computer science, environmental studies, history, mathematics, philosophy, political science, public policy sciences, sociology, and statistics or from an area that complements the candidate's area of research interests in economics.

See the Center for Demographic Studies in the chapter "Special and Cooperative Programs" for further information.

## **Engineering**

Earl H. Dowell, Sc.D., *Dean* (305 Teer Engineering Library Building); Robert W. Carr, Jr., B.S.E., *Associate Dean, Director of Development* (305 Teer Engineering Library Building)

The School of Engineering offers programs of study and research leading to the M.S. and Ph.D. degrees with a major in biomedical, civil and environmental, electrical and computer, and mechanical engineering and materials science. These programs are designed to provide: (1) development of depth and breadth in mathematics, computer science, the basic physical sciences, the life sciences where appropriate, and the engineering sciences; (2) mastery of an advanced body of knowledge in the candidate's chosen field of specialization or research; (3) experience in the art of engineering, including strong elements of intuition, imagination, and judgment; and (4) performance of original research which, in the case of the M.S. degree, demonstrates the ability to advance knowledge in the area of professional study and, in the case of the Ph.D. degree, makes a significant contribution to the research literature through publication in a leading professional journal in the field. Engineering graduate students are expected to participate in seminars appropriate to their fields of study. A minimum of 30 units of earned graduate credit beyond the bachelor's degree is required for the M.S. degree: 12 in the major, 6 in related minor work (usually mathematics or natural science), 6 in either the major or minor subject or in other areas approved by the major department, and 6 for a research-based thesis. A nonthesis option requiring 30 units of course credit is available. Each of the departments imposes additional requirements in the exercise of this option. There is no language requirement for this degree. For the Ph.D. degree in civil and environmental engineering, 12 units of course work beyond the master's degree are required to be in the major field, 6 in a related minor field, and 6 in either the major or minor field; in electrical engineering, 24 units are required in the major field and 12 units in a related minor field (often mathematics or natural science), 12 in either the major or minor subject or other areas approved by the major department, and 12 for a research-based dissertation. In biomedical and mechanical engineering and materials science there are no specific course requirements; each program is planned to meet individual needs. Doctoral students are required to pass qualifying and preliminary examinations which may be either written, oral, or a combination of written and oral components, at the discretion of the committee and the department.

In addition, the School of Engineering and the Fuqua School of Business offer an MBA/MS Joint-Degree Program.

## ENGINEERING

**221. Computational Linear Algebra.** Linear vector spaces of real and complex  $n$ -tuples, norms, metrics, inner-products, basis vectors, rank and dimensionality; matrices as linear maps, rank and nullity; particular and general solutions of  $Ax=b$ ; factorization of matrices by successive transformations; solution of  $Ax=b$  by direct and iterative methods; special and general eigenvalue problems; diagonalization and tridiagonalization by similarity transformations; power methods; and computational complexities, storage requirements, convergence characteristics, error propagation, and the mathematical basis of the studied algorithms. Prerequisites: Mathematics 111 or equivalent, and knowledge of any algorithmic programming language. 3 units. *S. Utku*

**300. Teaching Engineering.** Designed for engineering graduate students contemplating careers in academia. Topics include teaching skills, philosophy of higher education, academic integrity, research ethics, operation of a modern university, student development and learning, evaluation of performance, conducting teaching laboratories, advising, and other topics. No credit. *Vesilind*

## COURSES CURRENTLY UNSCHEDULED

### 222. Computer Solutions of Ordinary and Partial Differential Equations

## Biomedical Engineering

Professor Barr, *Chair*; Associate Professor Trahey, *Director of Graduate Studies* (267 Engineering Annex); Professors Clark, Hammond, Jaszczak, Johnson, Katz, McElhaney, Nolte, Plonsey, S. Smith, von Ramm, and Wolbarsht; Associate Professors Burdick, Massoud, Needham, Reichert, and Truskey; Assistant Professors Chilkoti, Guilak, Henriquez, Krassowska, Myers, Setton, and Wolf; Research Professor Floyd; Associate Research Professor Pasipoularides; Assistant Research Professors Bohs, Hales, Lobach

Biomedical engineering is the discipline in which the physical, mathematical, and engineering sciences and associated technology are applied to biology and medicine. Contributions range from modeling and simulation of physiological systems through experimental research to solutions of practical clinical problems. The goal of the graduate program in biomedical engineering is to combine training in advanced engineering, biomedical engineering, and the life sciences so that graduates of the program can contribute at the most advanced professional level. The doctoral dissertation should demonstrate significant and original contributions to an interdisciplinary topic, accomplished as an independent investigator. The major, current research areas of the department are: biochemical engineering, biofluid mechanics, biomechanics, biomedical materials, biomedical modeling, biosensors, biotechnology, data acquisition and processing, medical imaging, and electrophysiology. Every biomedical engineering graduate student is required to serve as a teaching assistant as part of the graduate training.

**201L. Electrophysiology.** The electrophysiology of excitable cells from a quantitative perspective. Topics include the ionic basis of action potentials, the Hodgkin-Huxley model, impulse propagation, source-field relationships, and an introduction to functional electrical stimulation. Students choose a relevant topic area for detailed study and report. Not open to students who have taken Biomedical Engineering 101L or equivalent. 3 units; 4 units with laboratory. Variable credit. *Barr or Henriquez*

**204. Measurement and Control of Cardiac Electrical Events.** Design of biomedical devices for cardiac application based on a review of theoretical and experimental results from cardiac electrophysiology. Evaluation of the underlying cardiac events using computer simulations. Examination of electrodes, amplifiers, pacemakers, and related computer apparatus. Construction of selected examples. Prerequisites: Biomedical Engineering 101L and 163L or equivalents. 3 units. *Wolf*



**205L. Microprocessors and Digital Instruments.** Design of microcomputer-based devices including both hardware and software considerations of system design. Primary emphasis on hardware aspects, including a progression through initial design, prototype construction in the laboratory, testing of prototypes to locate and correct faults, and final design evaluation. Evaluation includes examination of complexity, reliability, and cost. Design and construction oriented toward biomedical devices or instruments that include dedicated microcomputers, usually operating in real time. Prerequisites: Biomedical Engineering 163L, 164L and Engineering 53L or equivalents. 4 units. *Hammond*

**207. Transport Phenomena in Biological Systems.** An introduction to the modeling of complex biological systems using principles of transport phenomena and biochemical kinetics. Topics include the conservation of mass and momentum using differential and integral balances; rheology of Newtonian and non-Newtonian fluids; steady and transient diffusion in reacting systems; dimensional analysis; homogeneous versus heterogeneous reaction systems. Biomedical and biotechnological applications are discussed. C-L: Civil Engineering 207 and Mechanical Engineering 207. 3 units. *Katz or Truskey*

**208. Theoretical and Applied Polymer Science.** See C-L: Mechanical Engineering 211. 3 units. *Pearsall*

**211. Theoretical Electrophysiology.** Advanced topics on the electrophysiological behavior of nerve and striated muscle. Source-field models for single-fiber and fiber bundles lying in a volume conductor. Forward and inverse models for EMG and ENG. Bidomain model. Model and simulation for stimulation of single-fiber and fiber bundle. Laboratory exercises based on computer simulation, with emphasis on quantitative behavior and design. Readings from original literature. Prerequisite: Biomedical Engineering 101L or 201L or equivalent. 4 units. *Barr or Krassowska*

**212. Theoretical Electrocardiography.** Electrophysiological behavior of cardiac muscle. Emphasis on quantitative study of cardiac tissue with respect to propagation and the evaluation of sources. Effect of junctions, inhomogeneities, anisotropy, and presence of unbounded extracellular space. Bidomain models. Study of models of arrhythmia, fibrillation, and defibrillation. Electrocardiographic models and forward simulations. Laboratory exercises based on computer simulation, with emphasis on quantitative behavior and design. Readings from original literature. Prerequisite: Biomedical Engineering 101L or 201L or equivalent. 4 units. *Barr*

**215. Biomedical Materials and Artificial Organs.** Chemical structures, processing methods, evaluation procedures, and regulations for materials used in biomedical applications. Applications include implant materials, components of ex vivo circuits, and cosmetic prostheses. Primary emphasis on polymer-based materials and on optimization of parameters of materials which determine their utility in applications such as artificial kidney membranes and artificial arteries. Prerequisite: Biomedical Engineering 83L, Chemistry 151L or Engineering 83L or consent of instructor. C-L: Mechanical Engineering 215. 3 units. *Reichert*

**216. Transport Phenomena in Cells and Organs.** Applications of the principles of mass and momentum transport to the analysis of selected processes of biomedical and biotechnological interest. Emphasis on the development and critical analysis of models of the particular transport process. Topics include: reaction-diffusion processes, transport in natural and artificial membranes, dynamics of blood flow, pharmacokinetics, receptor-mediated processes and macromolecular transport, normal and neoplastic tissue. Prerequisite: Biomedical Engineering 207 or equivalent. 3 units. *Truskey*

**222. Principles of Ultrasound Imaging.** Propagation, reflection, refraction, and diffraction of acoustic waves in biologic media. Topics include geometric optics, physical

optics, attenuation, and image quality parameters such as signal-to-noise ratio, dynamic range, and resolution. Emphasis is placed on the design and analysis of medical ultrasound imaging systems. Prerequisites: Mathematics 111 and Physics 52L. 3 units. *von Ramm*

**228. Laboratory in Cellular and Biosurface Engineering.** Introduction to common experimental and theoretical methodologies in cellular and biosurface engineering. Experiments may include determination of protein and peptide diffusion coefficients in alginate beads, hybridoma cell culture and antibody production, determination of the strength of cell adhesion, characterization of cell adhesion or protein adsorption by total internal reflection fluorescence, and Newtonian and non-Newtonian rheology. Laboratory exercises are supplemented by lectures on experiment design, data analysis, and interpretation. 3 units. *Truskey*

**229. Tissue Mechanics.** Introduction to conservation laws and thermodynamic principles of continuum mechanics with application to tissues of the musculoskeletal and cardiovascular systems. Constitutive equations for hyperelastic solids and multiphase viscoelastic materials using mixture theory formulation. Emphasis on the application of these constitutive formulations to determination of stress and strain fields in equilibrium and transient deformations of calcified tissues (for example, cortical and trabecular bone), soft tissues (for example, ligament, cartilage, cornea, intervertebral disc, left ventricle, aorta), and biological fluids (for example, mucus, synovial fluid, polymer solutions). Tensor fields and indicial notation. Prerequisites: Biomedical Engineering 110L or Engineering 75L or equivalent, and Mathematics 111 or equivalent. 3 units. *Setton*

**231. Intermediate Biomechanics.** Biomechanics of hard and soft tissues: nonlinear viscoelastic behavior of tendon and ligament; poroelastic behavior of cartilage and meniscus; continuum modeling of bone. Emphasis will be placed on experimental techniques used to evaluate these tissues. Student seminars on topics in applied biomechanics will be included. Prerequisites: Biomedical Engineering 110L or Engineering 75L or equivalent, and Biomedical Engineering 83L or Engineering 83L or equivalent. 3 units. *Myers*

**233. Modern Diagnostic Imaging Systems.** The underlying concepts and instrumentation of several modern medical imaging modalities. Review of applicable linear systems theory and relevant principles of physics. Modalities studied include X-ray radiography (conventional film-screen imaging and modern electronic imaging), computerized tomography (including the theory of reconstruction), and nuclear magnetic resonance imaging. Prerequisite: junior or senior standing. 3 units. *Trahey*

**235. Acoustics and Hearing.** The generation and propagation of acoustic (vibrational) waves and their reception and interpretation by the auditory system. Topics under the heading of generation and propagation include free and forced vibrations of discrete and continuous systems, resonance and damping, and the wave equation and solutions. So that students may understand the reception and interpretation of sound, the anatomy and physiology of the mammalian auditory system are presented; and the mechanics of the middle and inner ears are studied. Prerequisites: Mathematics 111 and Physics 52L or equivalents. C-L: Electrical Engineering 284. 3 units. *Collins or Trahey*

**237. Biosensors.** Biosensors defined as the use of biospecific recognition mechanisms in the detection of analyte concentration. The basic principles of protein binding with specific reference to enzyme-substrate, lectin-sugar, antibody-antigen, and receptor-transmitting binding. Simple surface diffusion and absorption physics at surfaces with particular attention paid to surface binding phenomena. Optical, electrochemical, gravimetric, and thermal transduction mechanisms which form the basis of the sensor



design. Prerequisites: Biomedical Engineering 215 and consent of instructor. 3 units. *Reichert*

**239. Cell Transport Mechanisms.** Analysis of the migration of cells through aqueous media. Focus on hydrodynamic analysis of the directed self-propulsion of individual cells, use of random walk concepts to model the nondirected propulsion of individual cells, and development of kinetic theories of the migrations of populations of cells. Physical and chemical characteristics of the cells' environments that influence their motion, including rheologic properties and the presence of chemotactic, stimulatory, or inhibitory factors. Cell systems include mammalian sperm migration through the female reproductive tract, protozoa, and bacteria. Emphasis on mathematical theory. Experimental designs and results. Consent of instructor required. 3 units. *Katz*

**241. Artificial Intelligence in Medicine.** Basic concepts of artificial intelligence (AI) and in-depth examination of medical applications of AI. Knowledge of heuristic programming; brief examination of classic AI programming languages (LISP and PROLOG) and AI programming; rule-based systems and cognitive models. 3 units. *Hales or Hammond*

**243. Introduction to Medical Informatics.** An introduction to medical informatics: an in-depth study of the use of computers in biomedical applications. Hardware, software, and applications programming. Data collection, analysis, and presentation studied within application areas such as patient monitoring, computer-based medical records, computer-aided decision making, computer-aided instruction, quality assurance laboratory systems, wave form analysis, hospital information systems, and medical information systems. 3 units. *Hales or Hammond*

**244. Mathematical Models of Physiological Systems.** Mathematical modeling and computer simulation of physiological and other biomedical systems. Formulation of quantitative models of physiological processes using methods drawn from a variety of engineering disciplines including transport phenomena, feedback control, and continuum mechanics. Digital techniques for the solution of coupled nonlinear equations, emphasizing systems of ordinary and partial differential equations. Selected readings from the literature covering current models of cardiovascular, renal, neural, respiratory, and sensory systems. Prerequisite: Mathematics 111 or equivalent. 3 units. *Pasipoularides*

**246. Computational Methods in Biomedical Engineering.** Introduction to practical computational methods for data analysis and simulation with a major emphasis on implementation. Methods include numerical integration and differentiation, extrapolation, interpolation, splining FFTs, convolution, ODEs, and simple one- and two-dimensional PDEs using finite differencing. Introduction to concepts for optimizing codes on a CRAY-YMP. Examples from biomechanics, electrophysiology, and imaging. Project work included and students must have good working knowledge of Unix, Fortran, or C. Intended for graduate students and seniors who plan on attending graduate school. Prerequisite: Engineering 53L or equivalent, Mathematics 111 or equivalent, or consent of instructor. 3 units. *Henriquez*

**250. Cardiovascular Mechanics.** Mechanical principles and their applications in the human circulatory system. The coupling of solid and fluid behavior in cardiovascular organs is emphasized. Topics include: gravity and the circulation, kinematics of blood flow and circulatory volume balances, peripheral resistance, wall stresses and deformations, cardiac cycle and cardiac work, circulatory wave propagation, unsteady velocity profiles and boundary layers. Special student projects involve the design of diagnostic and therapeutic instruments and devices for cardiovascular applications. Prerequisites: Biomedical Engineering 110L and Mathematics 111 or equivalent. 3 units. *Pasipoularides*



**260. Devices for the Disabled.** Design of custom devices to aid disabled individuals. Students will be paired with health care professionals at local hospitals who will supervise the development of projects for specific clients. Formal engineering design principles will be emphasized; overview of associative technologies, patent issues, engineering ethics. Oral and written reports will be required. Selected projects may be continued as independent study. Prerequisite: Biomedical Engineering 164L or equivalent or consent of instructor. 3 units. *Bohs*

**264L. Medical Instrument Design.** General principles of signal acquisition, amplification processing, recording, and display in medical instruments. System design, construction, and evaluation techniques will be emphasized. Methods of real-time signal processing will be reviewed and implemented in the laboratory. Each student will design, construct, and demonstrate a functional medical instrument and collect and analyze data with that instrument. Formal write-ups and presentations of each project will be required. Prerequisite: Biomedical Engineering 164L or equivalent or senior standing. 4 units. *Smith, Trahey, or Wolf*

**265. Advanced Topics in Biomedical Engineering.** Advanced subjects related to programs within biomedical engineering tailored to fit the requirements of a small group. Consent of instructor required. Variable credit. *Staff*

#### **For Graduates**

**301, 302. Cellular and Biosurface Engineering Seminar.** Current topics in cellular and biosurface engineering. Theory and practice. Weekly seminar series. 1 unit each. *Reichert or Truskey*

**320. Medical Ultrasound Transducers.** A study of the design, fabrication, and evaluation of medical ultrasound transducers. Topics include wave propagation in piezoelectric crystals, Mason and KLM circuit models, linear arrays and two-dimensional arrays, piezoelectric ceramic/epoxy composite materials, piezoelectric polymers, and photo-acoustic materials. Consent of instructor required. 3 units. *S. Smith*

**330. Finite Element Method for Biomedical Engineers.** The finite element method with an emphasis on applications to biomedical engineering. Several detailed examples illustrate the finite element analysis process, which includes setting up a mathematical description of the problem, putting it into a form suitable for finite element solution, solving the discretized problem, and using advanced computer codes to check the correctness of the numerical results. Consent of instructor required. 3 units. *Staff*

**331. Viscoelasticity.** Viscoelasticity of hard and soft tissue solids and composite structures. Linear and nonlinear one-dimensional viscoelastic behavior, internal damping, and three-dimensional viscoelasticity. Approximation techniques for determination of viscoelastic constitutive equations from experimental data. Mathematical formulations for the characterization of the dynamic behavior of biologic structures. Consent of instructor required. 3 units. *Myers*

**333. Biomedical Imaging.** A study of the fundamentals of information detection, processing, and presentation associated with imaging in biology and medicine. Analysis of coherent and incoherent radiation and various image generation techniques. Design and analysis of modern array imaging systems as well as systems. 3 units. *von Ramm*

**340. Mechanics of Multiphase Biological Tissues.** Introduction to constitutive modeling of multiphase mixtures with application to biological tissues (for example, skin, cornea, ligament, cartilage, intervertebral disc). Fundamental conservation laws and thermodynamic principles of the theory of mixtures will be reviewed. Development of constitutive equations for mixtures containing inviscid and viscous fluids, as well as hyperelastic, viscoelastic, and charged solids. Emphasis on solution methods required

to determine the stress, strain, and flow fields in boundary value problems of simplified geometries, including problems for contact of two bodies. A knowledge of tensor fields, indicial notation, and partial differential equations is required. Prerequisites: Mathematics 114 or equivalent, and Biomedical Engineering 229 or consent of instructor. 3 units. *Setton*

**350. Principles of Research Management.** A survey of topics in modern research management techniques that will cover proven successful principles and their application in the areas of research lab organization, resource management, organization of technical projects, team leadership, financial accountability, and professional ethics. 1 unit. *Staff*

**399. Special Readings in Biomedical Engineering.** Individual readings in advanced study and research areas of biomedical engineering. Approval of director of graduate studies required. 1 to 3 units each. Variable credit. *Staff*

## COURSES CURRENTLY UNSCHEDULED

**202. Biomedical Transfer Processes**

**206L. Microprocessors and Digital Instruments**

**209. Kinetics and Reactor Design**

**223. Cellular and Integrative Cardiovascular Physiology and Biophysics**

**230. Biomechanics**

## Civil and Environmental Engineering

Professor Petroski, *Chair* (121 Engineering); Professor J. F. Wilson, *Director of Graduate Studies* (127A Engineering); Professors Haff, Melosh, S. Utku, and Vesilind; Associate Professors Hueckel, Kabala, Medina, Pas, Peirce, Reckhow, and Virgin; Assistant Professors Boadu, Faust, Jacobs, and Laursen; Professor Emeritus Brown; Adjunct Associate Professors Piver and B. Utku; Visiting Professor Narayanan

Civil and environmental engineering extends across mathematics, the natural sciences including physics, biology, and chemistry, and the social and management sciences. Civil and environmental engineers develop expertise in these disciplines to research, plan, design, construct, and analyze solutions to technical problems faced throughout society. These solutions vary widely in nature, size, and scope: space satellites and launching facilities, environmental systems and controls to protect public health, nuclear and conventional power plant structures, bridges, dams, buildings, tunnels, highways, and mass transportation systems.

Six major specialty areas at Duke enjoy national and international reputations for quality:

—*engineering mechanics*: the study of the behavior and control of solid and fluid systems under a broad range of design and extreme loading conditions; the development of new computational paradigms for complex mechanical systems;

—*environmental engineering*: the study of the disposal of hazardous waste, solid waste processing, pollutant fate and transport in water, soil, and air, and wastewater treatment to protect public health and the environment;

—*geomechanics*: the study of the response of soils and rocks to mechanical, hydraulic, and environmental loadings and its mathematical modeling;

—*structural engineering*: the study of behavior of structures and materials, the safe and economical design of engineered structures, fundamentals of adaptive structures, use of adaptive structures technology in precision and vibration control of space structures, and vibration inhibition in buildings subjected to seismic and wind excitations;



—**transportation and systems engineering:** the modeling and analysis of large and complex mechanical, environmental, and human systems to support decision making and policy analysis, complex decision making, pattern formation, and nonlinearity using computer simulation;

—**water resources engineering:** the analysis of use, preservation, and efficient management of surface and groundwater supplies.

Environmental mechanics is an interdisciplinary area of interest to many civil and environmental engineering faculty. The emphasis is on the mechanics of chemically and/or biologically interacting solids and liquids, including transport phenomena in porous media, environmental geomechanics, degradation and aging of structures and materials due to chemically aggressive environments, and natural and engineered environmental processes including sedimentation, coagulation, mixing, sludge processing, water and wastewater treatment, and barriers to prevent pollutant transport.

Laboratory facilities in the department are competitive with those found in major research universities worldwide. Computers are used for data collection and analysis, and a wide range of physical, chemical, and biological testing equipment is used in the laboratory for teaching and research activities. Advanced-graphics computer systems are also available. Project-specific measurement equipment is designed, constructed, and applied in many of the specialty areas mentioned above.

**201. Advanced Mechanics of Solids.** Tensor fields and index notation. Analysis of states of stress and strain. Conservation laws and field equations. Constitutive equations for elastic, viscoelastic, and elastic-plastic solids. Formulation and solution of simple problems in elasticity, viscoelasticity, and plasticity. 3 units. *Hueckel, Laursen, or Petroski*

**203. Plasticity.** Inelastic behavior of soils and engineering materials. Yield criteria. Flow rules. Concepts of perfect plasticity and plastic hardening. Methods of rigid-plasticity. Limit analysis. Isotropic and kinematic hardening. Plastic softening. Diffused damage. Thermo-plasticity. Visco-plasticity. Prerequisite: Civil Engineering 201 or consent of instructor. 3 units. *Hueckel*

**204. Plates and Shells.** Differential equation and extremum formulations of linear equilibrium problems of Kirchhoffian and non-Kirchhoffian plates of isotropic and anisotropic material. Solution methods. Differential equation formulation of thin anisotropic shell problems in curvilinear coordinates; membrane and bending theories; specialization for shallow shells, shells of revolution, and plates. Extremum formulation of shell problems. Solution methods. Prerequisites: Engineering 75L or 135 and Mathematics 111. 3 units. *S. Utku*

**205. Elasticity.** Introduction to linear theory of elasticity. Constitutive equations for anisotropic and isotropic elastic solids. Formulation and solution of torsion, bending, and flexure problems. Plane, axisymmetric, and three-dimensional problems. 3 units. *Petroski*

**207. Transport Phenomena in Biological Systems.** See C-L: Biomedical Engineering 207; also C-L: Mechanical Engineering 207. 3 units. *Katz or Truskey*

**210. Intermediate Dynamics.** See C-L: Mechanical Engineering 210. 3 units. *Hall or Knight*

**215. Engineering Systems Analysis.** Fundamental concepts and tools for engineering systems analysis, including optimization techniques and decision analysis. System definition and model formulation, optimization by calculus, linear programming, integer programming, separable integer programming, nonlinear programming, network analysis, dynamic programming, and decision analysis. Application to diverse engineering systems. 3 units. *Pas*



**217. Transportation Systems Analysis.** The transportation systems planning process. Quantitative analysis; mathematical modeling and computer simulation techniques for short-and long-range planning and evaluation of transportation systems. Prerequisite: (or corequisite) Civil Engineering 116 or consent of instructor. 3 units. *Pas*

**218. Engineering Management and Project Evaluation.** Economics and statistical analysis. Economic impact assessment, supply and demand forecasting, benefit/cost analysis, economic incentives, public and private finance, input/output analysis. Data organization, distributions, estimates of parameters, hypothesis testing, analysis of variance, and experimental design. 3 units. *Peirce*

**220. Water Resources Systems Planning and Management.** Focus on the development and application of mathematical modeling techniques to water resources systems problems. Deterministic and stochastic river basin modeling, irrigation planning and modeling, water quality prediction and management, wetlands management, the optimal expansion of existing water resources systems and reservoir operations. Emphasis on development and application of optimization models for the planning and management of complex water resources systems involving the interaction of groundwater and surface water resources. Mathematical techniques include linear and dynamic programming, Monte Carlo simulation, simulated annealing, nonlinear optimization and stochastic optimization. Prerequisites: Civil Engineering 123L and Civil Engineering 215 or Engineering 115 or equivalent. 3 units. *Jacobs*

**221. Engineering Systems Reliability, Safety, and Risk Assessment.** Introduction to the concepts of design reliability and safety. Topics include: concepts of probability in engineering planning and design, decision analysis and assessment of reliability, modeling and analysis of uncertainty, reliability-based design, multiple failure mode analysis, redundant and nonredundant systems, and fault tree analysis. Emphasis on determining the probability of failure for numerous engineering systems including structural systems, infrastructure systems, water treatment systems, environmental systems, and transportation networks. Prerequisite: Mathematics 111 or consent of instructor. 3 units. *Jacobs*

**225. Dynamic Engineering Hydrology.** Dynamics of the occurrence, circulation, and distribution of water; climate, hydrometeorology, geophysical fluid motions. Precipitation, surface runoff and stream flow, infiltration, water losses. Hydrograph analysis, catchment characteristics, hydrologic instrumentation, and computer simulation models. Prerequisite: Civil Engineering 122L or consent of instructor. 3 units. *Medina*

**227. Groundwater Hydrology and Contaminant Transport.** Review of surface hydrology and its interaction with groundwater. The nature of porous media, hydraulic conductivity, and permeability. General hydrodynamic equations of flow in isotropic and anisotropic media. Water quality standards and contaminant transport processes: advective-dispersive equation for solute transport in saturated porous media. Analytical and numerical methods, selected computer applications. Deterministic versus stochastic models. Applications: leachate from sanitary landfills, industrial lagoons and ponds, subsurface wastewater injection, monitoring of groundwater contamination. Conjunctive surface-subsurface models. Prerequisite: Civil Engineering 123L or consent of instructor. 3 units. *Medina*

**228L. Sludge Management and Disposal.** Production and characterization of residues from wastewater treatment. Theory of solid/water interfaces and vicinal water. Gravitational thickening and dewatering. Anaerobic stabilization, incineration, composting, and other treatment processes. Ultimate disposal. Prerequisites: Civil Engineering 124L or equivalent and consent of instructor. 3 units. *Vesilind*

**231. Theory of Adaptive Structures.** Behavior of structures composed of one-dimensional members, under inserted internal deformations. Linear excitation-response relations. Energy and power requirements of insertion. Conditions of insertion without structural resistance. Computation of internal deformations yielding a partially prescribed response. Static shape control and slow moving mechanical manipulators. Vibration control by internal deformation insertion in autonomous and nonautonomous systems. Prerequisite: senior or graduate standing. 3 units. *S. Utku*

**233. Prestressed Concrete Design.** A critical review of research and recent developments in prestressed concrete design. Prestressed tanks, beams, and columns; partial prestressing and composite design. Prerequisite: Civil Engineering 133L. 3 units. *Narayanan*

**237. Advanced Soil Mechanics.** Characterization of behavior of geomaterials. Stress-strain incremental laws. Nonlinear elasticity, hypo-elasticity, plasticity and viscoplasticity of geomaterials; approximated laws of soil mechanics; fluid-saturated soil behavior; cyclic behavior of soils; liquefaction and cyclic mobility; elements of soil dynamics; thermal effects on soils. Prerequisite: Civil Engineering 139L or equivalent. 3 units. *Hueckel*

**240. Fate of Organic Chemicals in the Aquatic Environment.** Kinetic, equilibrium, and analytical approaches applied to quantitative description of processes affecting the fate of anthropogenic and natural organic compounds in surface and groundwaters and in selected treatment processes, including sorption phenomena, gas transfer, hydrolysis, photochemistry, oxidation-reduction, and biodegradation. Sampling, detection, identification, and quantification of organic compounds in the environment. Gas and liquid chromatography and mass spectrometry. Prerequisites: university-level general chemistry and organic chemistry within last four years. C-L: Environment 240. 3 units. *Dubay and Faust*

**241. Atmospheric Chemistry and Air Pollution.** Chemical kinetics and equilibrium applied to the mechanistic and quantitative description of processes affecting the fates of anthropogenic and natural chemicals in the troposphere, on local, regional, and global scales. Direct photolysis; gas-phase photo-formation and fates of ozone, radicals, and other oxidants; gas-phase oxidations of volatile organic compounds; gas-to-drop partitioning; aqueous-phase photoformation and fates of hydrogen peroxide, radicals, and other oxidants in the aqueous phases of clouds, fogs, and aerosols; effects of aqueous-phase reactions on the chemical composition of the troposphere; gas-phase and aqueous-phase oxidations of organic and inorganic compounds; stratospheric ozone depletion. Prerequisites: university-level general chemistry and organic chemistry within last four years. C-L: Environment 241. 3 units. *Faust*

**242. Environmental Aquatic Chemistry.** Principles of chemical kinetics and equilibria applied to quantitative description of the chemistry of lakes, rivers, oceans, groundwaters, and selected treatment processes. Equilibrium, steady state, and other kinetic models applied to processes such as the carbonate system, coordination chemistry, precipitation and dissolution, oxidation-reduction, photochemistry, adsorption, and heterogeneous reactions. Prerequisite: university-level general chemistry within last four years. C-L: Environment 242. 3 units. *Faust*

**243. Physicochemical Unit Operations in Water Treatment.** Fundamental bases for design of water and waste treatment systems, including transport, mixing, sedimentation and filtration, gas transfer, coagulation, and absorption processes. Emphasis on physical and chemical treatment combinations for drinking water supply. Prerequisite: Civil Engineering 124L. 3 units. *Kabala*



**244. Applied Microbial Processes.** Existing and novel microbial processes as they pertain to biotechnological products, specialty bioconversions, and to treat or exploit wastes. Concepts of microbiology, chemical engineering, the stoichiometry and kinetics of complex microbial metabolism, and process analysis. Specific processes such as carbon oxidation, vinegar and alcohol production, nitrification, methane production, biological electricity generation, recombinant protein secretion, and wastewater treatment in long-term space travel are discussed. Consent of instructor required. 3 units. *Staff*

**245. Pollutant Transport Systems.** Distribution of pollutants in natural waters and the atmosphere; diffusive and advective transport phenomena within the natural environment and through artificial conduits and storage/treatment systems. Analytical and numerical prediction methods. Prerequisites: Civil Engineering 122L and Mathematics 111 or equivalents. 3 units. *Medina*

**246. Water Supply Engineering Design.** The study of water resources and municipal water requirements including reservoirs, transmission, treatment and distribution systems; methods of collection, treatment, and disposal of municipal and industrial wastewaters. The course includes the preparation of a comprehensive engineering report encompassing all aspects of municipal water and wastewater systems. Field trips to be arranged. Prerequisite: Civil Engineering 124L or consent of instructor. 3 units. *Vesilind*

**247. Air Pollution Control Engineering.** The problems of air pollution with reference to chemical and biological effects. Measurement and meteorology. Air pollution control engineering. Noise pollution and air pollution law. 3 units. *Peirce*

**248. Solid Waste Engineering.** Engineering design of material and energy recovery systems including traditional and advanced technologies. Sanitary landfills and incineration of solid wastes. Application of systems analysis to collection of municipal refuse. Major design project in solid waste management. Prerequisite: Civil Engineering 124L or consent of instructor. C-L: Environment 248. 3 units. *Vesilind*

**249. Control of Hazardous and Toxic Waste.** Engineering solutions to industrial and municipal hazardous waste problems. Handling, transportation, storage, and disposal technologies. Biological, chemical, and physical processes. Upgrading abandoned disposal sites. Economic and regulatory aspects. Case studies. Consent of instructor required. 3 units. *Peirce*

**251. Systematic Engineering Analysis.** Mathematical formulation and numerical analysis of engineering systems with emphasis on applied mechanics. Equilibrium and eigenvalue problems of discrete and distributed systems; properties of these problems and discretization of distributed systems in continua by the trial functions with undetermined parameters. The use of weighted residual methods, finite elements, and finite differences. Prerequisite: senior or graduate standing. 3 units. *S. Utku*

**252. Buckling of Engineering Structures.** An introduction to the underlying concepts of elastic stability and buckling, development of differential equation and energy approaches, buckling of common engineering components including link models, struts, frames, plates, and shells. Consideration will also be given to inelastic behavior, postbuckling, and design implications. Prerequisite: Civil Engineering 131L or consent of instructor. C-L: Mechanical Engineering 252. 3 units. *Virgin*

**254. Introduction to the Finite Element Method.** Investigation of the finite element method as a numerical technique for solving linear ordinary and partial differential equations, using rod and beam theory, heat conduction, elastostatics and dynamics, and advective/diffusive transport as sample systems. Emphasis placed on formulation and programming of finite element models, along with critical evaluation of results. Topics



include: Galerkin and weighted residual approaches, virtual work principles, discretization, element design and evaluation, mixed formulations, and transient analysis. Prerequisites: a working knowledge of ordinary and partial differential equations, numerical methods, and programming in FORTRAN. 3 units. *Laursen*

**255. Nonlinear Finite Element Analysis.** Formulation and solution of nonlinear initial/boundary value problems using the finite element method. Systems include nonlinear heat conduction/diffusion, geometrically nonlinear solid and structural mechanics applications, and materially nonlinear systems (for example, elastoplasticity). Emphasis on development of variational principles for nonlinear problems, finite element discretization, and equation-solving strategies for discrete nonlinear equation systems. Topics include: Newton-Raphson techniques, quasi-Newton iteration schemes, solution of nonlinear transient problems, and treatment of constraints in a nonlinear framework. An independent project, proposed by the student, is required. Prerequisite: Civil Engineering 254 or consent of instructor. 3 units. *Laursen*

**260. Vadose Zone Hydrology.** Transport of fluids, heat, and contaminants through unsaturated porous media. Understanding the physical laws and mathematical modeling of relevant processes. Field and laboratory measurements of moisture content and matric potential. Prerequisite: Civil Engineering 122L and Mathematics 111, or consent of instructor. 3 units. *Kabala*

**261. Stochastic Subsurface Hydrology.** Stochastic partial differential equations of subsurface hydrology and their solutions for the first few concentration moments and for the full concentration probability density function. Local and nonlocal models. Formulation in terms of integral properties of porous media which account for heterogeneities that influence solute transport. Prerequisite: Civil Engineering 122L and Mathematics 111, or consent of instructor. 3 units. *Kabala*

**264. Physico-Bio-Chemical Transformations.** Surveys of a selection of topics related to the interaction between fluid flow (through channels or the porous media) and physical, chemical, and biochemical transformations encountered in environmental engineering. Numerous diverse phenomena, including solute transport in the vicinity of chemically reacting surfaces, reverse osmosis, sedimentation, centrifugation, ultrafiltration, rheology, microorganism population dynamics, and others will be presented in a unifying mathematical framework. Prerequisite: Civil Engineering 122L and Mathematics 111, or consent of instructor. 3 units. *Kabala*

**265. Advanced Topics in Civil and Environmental Engineering.** Opportunity for study of advanced subjects relating to programs within the civil and environmental engineering department tailored to fit the requirements of individuals or small groups. Variable credit. *Staff*

**270. Environmental and Engineering Geophysics.** Use of geophysical methods for solving engineering and environmental problems. Theoretical frameworks, techniques, and relevant case histories as applied to engineering and environmental problems (including groundwater evaluation and protection, siting of landfills, chemical waste disposals, roads assessments, foundations investigations for structures, liquefaction and earthquake risk assessment). Introduction to theory of elasticity and wave propagation in elastic and poroelastic media, electrical and electromagnetic methods, and ground penetrating radar technology. Prerequisite: Mathematics 111 or Physics 52L or consent of instructor. 3 units. *Boadu*

**271. Inverse Problems in Geosciences and Engineering.** Basic concepts, theory, methods of solution, and application of inverse problems in engineering, groundwater modeling, and applied geophysics. Deterministic and statistical frameworks for solving inverse problems. Strategies for solving linear and nonlinear inverse problems. Bayesian

approach to nonlinear inverse problems. Emphasis on the ill-posed problem of inverse solutions. Data collection strategies in relation to solution of inverse problems. Model structure identification and parameter estimation procedures. Prerequisite: Mathematics 111 or consent of instructor. 3 units. *Boadu*

**281. Experimental Systems.** Formulation of experiments; Pi theorem and principles of similitude; data acquisition systems; static and dynamic measurement of displacement, force, and strain; interfacing experiments with digital computers for data storage, analysis, and plotting. Students select, design, perform, and interpret laboratory-scale experiments involving structures and basic material behavior. Prerequisite: senior or graduate standing in engineering or the physical sciences. 3 units. *J. F. Wilson*

**283. Structural Dynamics.** Formulation of dynamic models for discrete and continuous structures; normal mode analysis, deterministic and stochastic responses to shocks and environmental loading (earthquakes, winds, and waves); introduction to nonlinear dynamic systems, analysis and stability of structural components (beams and cables and large systems such as offshore towers, moored ships, and floating platforms). 3 units. *J. F. Wilson*

**301, 302. Graduate Colloquium.** Current topics in civil and environmental engineering theory and practice. Weekly seminar series. No credit. *Wilson*

**399. Special Readings in Civil and Environmental Engineering.** Special individual readings in a specific area of study in civil and environmental engineering. Approval of director of graduate studies required. 1 to 3 units. Variable credit. *Graduate faculty*

#### **COURSES CURRENTLY UNSCHEDULED**

**202. Advanced Mechanics of Solids II**

**209. Kinetics and Reactor Design**

**212. Mechanical Behavior and Fracture of Materials**

**216. Transportation Planning and Policy Analysis**

**222. Open Channel Flow**

**223. Flow Through Porous Media**

**226. Operational Hydrology**

**232. Reinforced Concrete Design**

**234. Advanced Structural Design in Metals**

**235. Foundation Engineering**

**236. Earth Structures**

**238. Rock Mechanics**

**239. Physical Properties of Soils**

**257. Structural Optimization**

**258. Analysis of Dynamic and Nonlinear Behavior of Structures**

**337. Elements of Soil Dynamics**

**350. Advanced Engineering Analysis**

# Electrical and Computer Engineering

Professor Gelenbe, *Chair*; Professor Nolte, *Director of Graduate Studies* (172 Engineering); Professors Casey, Fair, Joines, Marinos, Trivedi, and Wang; Associate Professors Board, Carin, Kedem, Krolik, Massoud, and Samulski; Assistant Professors Collins, Daniels-Race, George, Hansen, Lebeck, and Teitsworth; Professors Emeritus Owen and Wilson; Assistant Research Professor Ybarra; Adjunct Professors Iafrate, Lontz, Marin, and Strosio; Adjunct Associate Professors Ardalan, Derby, and Kanopoulos; Adjunct Assistant Professors Bottomley, Bushnell, Goodwin-Johansson, Morizio, Onvural, Palmer, Rindos, Spano, and Strole; Visiting Professors Kaiser and McCumber

A student may specialize in any one of the following fields in working toward either the M.S. or the Ph.D. degree with a major in electrical engineering: computer engineering, computer architecture, fault-tolerant computer systems, scientific computing, parallel processing, VLSI CAD tools, signal processing, digital speech processing, Signal processing for auditory prostheses; signal detection and estimation, ocean acoustic signal processing, image processing, solid-state electronics, integrated circuit processing and process simulation, molecular-beam epitaxy, III-V compound semiconductor materials and devices, machine intelligence, applications of electromagnetic fields and waves. Recommended prerequisites for the graduate courses in electrical engineering include a knowledge of basic mathematics and physics, electrical networks, electromagnetic and system theory. Students in doubt about their background for enrollment in specific courses should discuss the matter with the director of graduate studies. The M.S. degree program includes either a thesis or a project and an oral examination. A qualifying examination is required for the Ph.D. degree program. This examination is intended to test both the breadth and depth of the student's understanding of basic electrical engineering concepts. There is no foreign language requirement.

**211. Quantum Mechanics.** Discussion of wave mechanics including elementary applications, free particle dynamics, Schrödinger equation including treatment of systems with exact solutions, and approximate methods for time-dependent quantum mechanical systems with emphasis on quantum phenomena underlying solid-state electronics and physics. Prerequisite: Mathematics 111 or equivalent. 3 units. *Staff*

**214. Introduction to Solid-State Physics.** Discussion of solid-state phenomena including crystalline structures, X-ray and particle diffraction in crystals, lattice dynamics, free electron theory of metals, energy bands, and superconductivity, with emphasis on understanding electrical and optical properties of solids. Prerequisite: quantum physics at the level of Physics 143L or Electrical Engineering 211. C-L: Physics 214. 3 units. *Daniels-Race or Teitsworth*

**215. Semiconductor Physics.** A quantitative treatment of the physical processes that underlie semiconductor device operation. Topics include band theory and conduction phenomena; equilibrium and nonequilibrium charge carrier distributions; charge generation, injection, and recombination; drift and diffusion processes. Prerequisite: Electrical Engineering 211 or consent of instructor. 3 units. *Staff*

**216. Devices for Integrated Circuits.** Derivation of basic semiconductor properties such as the effective mass, effective density of states, SHR recombination, avalanche breakdown and energy-band diagrams. Application of the continuity equation, Gauss' law, and Poisson's equation to obtain the I-V and C-V behavior of Si and GaAs Schottky barriers, GaAs MESFETs; Si JFETs, bipolar transistors and MOSFETs. Relation of device physics to SPICE parameters. Four laboratory exercises. 3 units. *Casey*

**217. Analog Integrated Circuits.** Analysis and design of bipolar and CMOS analog integrated circuits. SPICE device models and circuit macromodels. Classical operational amplifier structures, current feedback amplifiers, and building blocks for analog signal



processing, including operational transconductance amplifiers and current conveyors. Biasing issues, gain and bandwidth, compensation, and noise. Influence of technology and device structure on circuit performance. Extensive use of industry-standard CAD tools, such as Analog Workbench. Prerequisite: Electrical Engineering 216. 3 units. *Staff*

**218. Integrated Circuit Engineering.** Basic processing techniques and layout technology for integrated circuits. Photolithography, diffusion, oxidation, ion implantation, and metallization. Design, fabrication, and testing of integrated circuits. Prerequisite: Electrical Engineering 216. 3 units. *Fair*

**219. Digital Integrated Circuits.** Analysis and design of digital integrated circuits. IC technology. Switching characteristics and power consumption in MOS devices, bipolar devices, and interconnects. Analysis of digital circuits implemented in NMOS, CMOS, TTL, ECL, and BiCMOS. Propagation delay modeling. Analysis of logic (inverters, gates) and memory (SRAM, DRAM) circuits. Influence of technology and device structure on performance and reliability of digital ICs. SPICE modeling. Prerequisites: Electrical Engineering 151L and 216. 3 units. *Massoud*

**243. Pattern Classification and Recognition.** Parameter estimation and supervised learning, nonparametric techniques, linear discriminant functions, clustering, language theory related to pattern recognition, examples from areas such as character and severe weather recognition, classification of community health data, recognition of geometrical configurations, algorithms for recognizing low resolution touch-sensor array signatures and 3-D objects. Consent of instructor required. 3 units. *Wang*

**245. Digital Control Systems.** Review of traditional techniques used for the design of discrete-time control systems; introduction of "nonclassical" control problems of intelligent machines such as robots. Limitations of the assumptions required by traditional design and analysis tools used in automatic control. Consent of instructor required. 3 units. *Staff*

**246. Optimal Control.** Review of basic linear control theory and linear/nonlinear programming. Dynamic programming and the Hamilton-Jacobi-Bellman Equation. Calculus of variations. Hamiltonian and costate equations. Pontryagin's Minimum Principle. Solution to common constrained optimization problems. This course is designed to satisfy the need of several engineering disciplines. Prerequisite: Electrical Engineering 141 or equivalent. C-L: Mechanical Engineering 232. 3 units. *Bushnell*

**251. Advanced Digital System Design.** Theory and hands-on experience in advanced digital system design. High-speed design, high complexity design (more than 10,000 gates), implementation technology selection, system modeling, power and clock distribution, line termination, and cooling. Case studies and demonstrations. Extensive use of CAD tools for logic minimization, logic synthesis, and system simulation. Rapid system prototyping with off-the-shelf and custom components. Laboratory exercises and a semester project. Prerequisites: Electrical Engineering 151L and 163L (or Biomedical Engineering 163L with consent of instructor). 3 units. *Kanopoulos*

**252. Advanced Digital Computer Architecture.** A second course on computer architecture. Definition of high-performance computing. The von Neumann bottleneck, Amdahl's law. Computer taxonomies. Memory organization, Princeton/Harvard architectures, caches, and virtual memory. Instruction pipelining. Vector processing. Instruction sets (RISC/CISC/VLIW). Parallel processing (SIMD/MIMD). Multiprocessor interconnection networks, communications, and synchronization. Prerequisite: Computer Science 104 or Electrical Engineering 152L. 3 units. *Board*

**253. Parallel System Performance.** Intrinsic limitations to computer performance. Amdahl's Law and its extensions. Components of computer architecture and operating systems, and their impact on the performance available to applications. Intrinsic prop-

erties of application programs and their relation to performance. Task graph models of parallel programs. Estimation of best possible execution times. Task assignment and related heuristics. Load balancing. Specific examples from computationally intensive, I/O intensive, and mixed parallel and distributed computations. Global distributed system performance. Prerequisites: Computer Science 110; Electrical Engineering 151L and 152L. 3 units. *Gelenbe*

**254. Fault-Tolerant and Testable Computer Systems.** Faults and failure mechanisms, test generation techniques and diagnostic program development for detection and location of faults in digital networks; design for testability, redundancy techniques, self-checking and fail-safe networks, fault-tolerant computer architectures. Prerequisite: Electrical Engineering 151L or equivalent. C-L: Computer Science 225. 3 units. *Marinos*

**255. Mathematical Methods for Systems Analysis I.** Basic concepts and techniques used in the stochastic modeling of systems. Elements of probability, statistics, queuing theory, and simulation. Prerequisite: four semesters of college mathematics. C-L: Computer Science 226. 3 units. *Trivedi*

**257. Performance and Reliability of Computer Networks.** Methods for performance and reliability analysis of local area networks as well as wide area networks. Probabilistic analysis using Markov models, stochastic Petri nets, queuing networks, and hierarchical models. Statistical analysis of measured data and optimization of network structures. Prerequisites: Electrical Engineering 156 and 255. 3 units. *Trivedi*

**258. Artificial Neural Networks.** Elementary biophysical background for signal propagation in natural neural systems. Artificial neural networks (ANN) and the history of computing; early work of McCulloch and Pitts, of Kleene, of von Neumann and others. The McCulloch and Pitts model. The connectionist model. The random neural network model. ANN as universal computing machines. Associative memory; learning; algorithmic aspects of learning. Complexity limitations. Applications to pattern recognition, image processing and combinatorial optimization. Prerequisite: Electrical Engineering 151L. 3 units. *Gelenbe*

**261. Full Custom VLSI Design.** A first course in VLSI design with CMOS technologies. A study of devices, circuits, fabrication technology, logic design techniques, subsystem design and system architecture. Modeling of circuits and subsystems. Testing of gates, subsystems and chips, and design for testability. The fundamentals of full-custom design, and some semi-custom design. Prerequisite: Electrical Engineering 151L or equivalent; Electrical Engineering 163L (or Biomedical Engineering 163L with consent of instructor) or equivalent. 3 units. *Morizio*

**262. Advanced VLSI Design and Test.** An advanced course in VLSI design with emphasis on the design of application specific IC's (ASIC) for a given set of specifications. Discussions of available technologies for ASIC implementation and tradeoffs in using these technologies. Static and dynamic CMOS design of commonly used circuits (adders, multipliers, RAM, pads). Packaging and testing of ASIC's with emphasis on functional and performance verification. This course stresses the design of ASIC's within a systems design environment and with the use of appropriate design tools that can be used to validate a design based on a given set of design specifications. Prerequisite: Electrical Engineering 261. 3 units. *Kanopoulos*

**266. VLSI Design Verification Techniques.** VLSI verification tool design. Design and capabilities of circuit simulation, timing simulation, logic simulation, and functional simulation. Techniques applied in timing verification and other static verification tools. Parallel processing and its application to simulation. Physical design issues related to verification. Prerequisite: Electrical Engineering 261, working knowledge of C. 3 units. *Staff*



**269. VLSI Chip Testing.** Introduction to VLSI chip and system testing. Testing theory, strategies, and fault identification. Hands-on testing experience with faulty chips and systems, chips designed in Electrical Engineering 261, and testing equipment available in the department. Prerequisite: Electrical Engineering 261. 3 units. *Staff*

**271. Electromagnetic Theory.** The classical theory of Maxwell's equations; electrostatics, magnetostatics, boundary value problems including numerical solutions, currents and their interactions, and force and energy relations. Three class sessions. Consent of instructor required. 3 units. *Carin or Joines*

**272. Electromagnetic Communication Systems.** Review of fundamental laws of Maxwell, Gauss, Ampere, and Faraday. Elements of waveguide propagation and antenna radiation. Analysis of antenna arrays by images. Determination of gain, loss, and noise temperature parameters for terrestrial and satellite electromagnetic communication systems. Prerequisite: Electrical Engineering 170L or 271. 3 units. *Joines*

**273. Optical Communication Systems.** Mathematical methods, physical ideas, and device concepts of optoelectronics. Maxwell's equations, and definitions of energy density and power flow. Transmission and reflection of plane waves at interfaces. Optical resonators, waveguides, fibers, and detectors are also presented. Prerequisite: Electrical Engineering 170L or equivalent. 3 units. *Joines*

**274. Modern Optics I.** Optical processes including the propagation of light, coherence, interference, and diffraction. Consideration of the optical properties of solids with applications of these concepts to lasers and modern optical devices. Lecture and laboratory projects. C-L: Physics 185. 3 units. *Guenther*

**275. Microwave Electronic Circuits.** Microwave circuit analysis and design techniques. Properties of planar transmission lines for integrated circuits. Matrix and computer-aided methods for analysis and design of circuit components. Analysis and design of input, output, and interstage networks for microwave transistor amplifiers and oscillators. Topics on stability, noise, and signal distortion. Prerequisite: Electrical Engineering 170L or equivalent. 3 units. *Joines*

**276. Laser Physics.** Prerequisites: Electrical Engineering 170L or Physics 182 and Electrical Engineering 211 or Physics 211. See C-L: Physics 261. 3 units. *Skatrud*

**281. Random Signals and Noise.** Introduction to mathematical methods of describing and analyzing random signals and noise. Review of basic probability theory; joint, conditional, and marginal distributions; random processes. Time and ensemble averages, correlation, and power spectra. Optimum linear smoothing and predicting filters. Introduction to optimum signal detection, parameter estimation, and statistical signal processing. Prerequisite: Mathematics 135 or Statistics 113. 3 units. *Collins or Hansen*

**282. Digital Signal Processing.** Introduction to the fundamentals of processing signals by digital techniques with applications to practical problems. Discrete time signals and systems, elements of the Z-transform, discrete Fourier transforms, digital filter design techniques, fast Fourier transforms, and discrete random signals. 3 units. *Nolte*

**283. Digital Communication Systems.** Digital modulation techniques. Coding theory. Transmission over bandwidth constrained channels. Signal fading and multipath effects. Spread spectrum. Optical transmission techniques. Prerequisite: Electrical Engineering 281 or consent of instructor. 3 units. *Staff*

**284. Acoustics and Hearing.** Prerequisites: Mathematics 111 and Physics 52L or equivalents. C-L: Biomedical Engineering 235. 3 units. *Collins or Trahey*



**285. Signal Detection and Extraction Theory.** Introduction to signal detection and information extraction theory from a statistical decision theory viewpoint. Subject areas covered within the context of a digital environment are decision theory, detection and estimation of known and random signals in noise, estimation of parameters and adaptive recursive digital filtering, and decision processes with finite memory. Applications to problems in communication theory. Prerequisite: Electrical Engineering 281 or consent of instructor. 3 units. *Nolte*

**286. Digital Processing of Speech Signals.** Detailed treatment of the theory and application of digital speech processing. Modeling of the speech production system and speech signals; speech processing methods; digital techniques applied in speech transmission, speech synthesis, speech recognition, and speaker verification. Acoustic-phonetics, digital speech modeling techniques, LPC analysis methods, speech coding techniques. Application case studies: synthesis, vocoders, DTW (dynamic time warping)/HMM (hidden Markov modeling) recognition methods, speaker verification/identification. Prerequisite: Electrical Engineering 182 or equivalent or consent of instructor. 3 units. *Hansen*

**287. Underwater Communications.** Elements of communication theory and digital signal processing are combined with basic physics and oceanography to offer an overview of underwater communications, with an emphasis on the radar/sonar problem. Beamforming with transducer arrays. Signal design and target resolution; the ambiguity function. The ocean as a communication channel: sound propagation and ambient noise characteristics. Performance analysis of selected communication scenarios and case studies of operational sonar systems. Prerequisite: Electrical Engineering 181 or consent of instructor. 3 units. *Staff*

**288. Image and Array Signal Processing.** Multidimensional digital signal processing with applications to practical problems in image and sensor array processing. Two-dimensional discrete signals and systems, discrete random fields, 2-D sampling theory, 2-D transforms, image enhancement, image filtering and restoration, space-time signals, beamforming, and inverse problems. Prerequisite: Electrical Engineering 282 or consent of instructor. 3 units. *Krolik*

**289. Adaptive Filters.** Adaptive digital signal processing with emphasis on the theory and design of finite-impulse response adaptive filters. Stationary discrete-time stochastic processes, Wiener filter theory, the method of steepest descent, adaptive transverse filters using gradient-vector estimation, analysis of the LMS algorithm, least-squares methods, recursive least squares and least squares lattice adaptive filters. Application examples in noise cancelling, channel equalization, and array processing. Prerequisites: Electrical Engineering 281 and 282 or consent of instructor. 3 units. *Krolik*

**299. Advanced Topics in Electrical Engineering.** Opportunity for study of advanced subjects related to programs within the electrical engineering department tailored to fit the requirements of a small group. Consent of director of undergraduate studies and of supervising instructor required. Variable credit. *Staff*

**312. Electronic Properties of Submicron Solid-State Devices.** Review of quantum mechanics, scattering and transport, Boltzmann transport equation, quantum effects in devices with emphasis on one- and two-dimensional transport, electron-polar phonon interactions, quantum transport. Prerequisite: quantum mechanics. C-L: Physics 333. 3 units. *Strosio*

**316. Advanced Physics of Semiconductor Devices.** Semiconductor materials: band structure and carrier statistics. Advanced treatments of metal-semiconductor contacts, Schottky barriers, p-n junctions, bipolar transistors (charge-control and Gummel-Poon models), and field-effect transistors (short channel effects, scaling theory, subthreshold

conduction, nonuniformly doped substrates, surface and buried-channel devices, hot-electron effects). Device modeling in two dimensions using PISCES. Prerequisite: Electrical Engineering 216. 3 units. *Massoud*

**318. Integrated Circuit Fabrication Laboratory.** Introduction to IC fabrication processes. Device layout. Mask design and technology. Wafer cleaning, etching, thermal oxidation, thermal diffusion, lithography, and metallization. Laboratory fabrication and characterization of basic IC elements (p-n junctions, resistors, MOS capacitors, gated diodes, and MOSFETs). Use of four-point probe, ellipsometer, spreading resistance probe, scanning electron microscope, and evaporation system. Testing of basic inverters and gates. Prerequisites: Electrical Engineering 218 and consent of instructor. 3 units. *Massoud*

**352. Advanced Topics in Digital Systems.** A selection of advanced topics from the areas of digital computer architectures and fault-tolerant computer design. Prerequisite: Electrical Engineering 252 or equivalent. C-L: Computer Science 320. 3 units. *Staff*

**361. Advanced VLSI Design.** Theory of advanced VLSI design. Specifications development, methodology, issues, circuit-level trade-offs. Full custom design, standard cell design, gate array design, silicon compilation. Semiconductor technologies and logic families for semi-custom design. Clocking schemes and distribution, race conditions. Design of a variety of circuits (adders, I/O drivers, RAM, FIFO, etc.) Testing of all phases in the life cycle of an integrated circuit. Top-down design and bottom-up implementation. Student projects. Prerequisite: Electrical Engineering 261 or equivalent. C-L: Computer Science 322. 3 units. *Kedem*

**399. Special Readings in Electrical Engineering.** Special individual readings in a specified area of study in electrical engineering. Approval of director of graduate studies required. 1 to 4 units. Variable credit. *Graduate staff*

## COURSES CURRENTLY UNSCHEDULED

**311. Quantum Electronics**

**334. Nonlinear Oscillations in Physical Systems**

**342. Optimal Control Theory**

**371. Advanced Electromagnetic Theory**

**373. Selected Topics in Field Theory**

**382. Advanced Topics in Signal Processing**

**383. Applied Information Theory and Statistical Estimation**

## Mechanical Engineering and Materials Science

Professor Cocks, *Chair* (142A Engineering); Professor Harman, *Director of Graduate Studies* (145 Engineering); Professors Behringer, Bejan, Dowell, Garg, Gösele, Hochmuth, Pearsall, Shaughnessy, Shepard, and Tan; Associate Professors Bliss, Eom, Jones, Knight, Needham, Virgin, and Wright; Assistant Professors Buzzard, Chen, Clark, Hall, Howle, Lozier, and Thompson; Research Associate Professor Zhong; Research Assistant Professors Ping-Beall and Zhelev; Adjunct Professors Lee and Wu; Adjunct Associate Professors Cherry and Crowson

The department offers programs of study and research leading to the M.S. and Ph.D. degrees in both mechanical engineering and materials science. Within mechanical engineering, the broad areas of concentration include thermal and fluids systems, mechanics and biomechanics, and dynamics, including nonlinear dynamics and control.



Within materials science, the areas of concentration include electronic materials, biomaterials, nanostructures, and the determination of material characteristics. The department emphasizes a highly research-oriented Ph.D. degree program. Students in the Ph.D. degree program who do not already have a master's degree are urged to meet the course and other general requirements for this degree and to obtain it during completion of their program. Programs of study are highly flexible to meet individual needs. Current research areas available include: cell, membrane, and surface engineering; biorheology; convection; granular flow; diffusion and heat transfer in heterogeneous media; thermal phenomena in micro-and nanostructures; aeroelasticity; computational fluid dynamics; chaotic systems; vibrations and acoustics of dynamic systems; sound propagation and absorbing materials; unsteady aerodynamics; thermal design by entropy generation minimization; control systems; robotics; expert systems; bearing design and lubrication; nano-tribology; magnetic levitation; mechanical properties of human stones; positron annihilation spectroscopy; diffusion and kinetics in Si, GaAs, and other electronic materials; semiconductor wafer bonding; computational materials science; and structural and offshore mechanics.

**202. Engineering Thermodynamics.** Axiomatic formulations of the first and second laws. General thermodynamic relationships and properties of real substances. Energy, availability, and second law analysis of energy conversion processes. Reaction and multiphase equilibrium. Power generation. Low temperature refrigeration and the third law of thermodynamics. Thermodynamic design. 3 units. *Bejan*

**207. Transport Phenomena in Biological Systems.** See C-L: Biomedical Engineering 207; also C-L: Civil Engineering 207. 3 units. *Katz or Truskey*

**208. Introduction to Colloid and Surface Science.** This course divides naturally into three sections. The colloid state: classification of colloids and the theoretical frameworks and experimental techniques involved in their characterization. Interfaces: surface tension and free energy; curved interfaces; adhesion, cohesion and wetting; surface activity; catalytic and mechanical properties of solid surfaces. Inter-Surface Forces: the balance of attractive and repulsive forces which operate between colloidal particles and at macroscopic surfaces. Some emphasis on natural and artificial biomembranes. Consent of instructor required. 3 units. *Needham*

**210. Intermediate Dynamics.** Comprehensive treatment of the dynamic motion of particles and rigid bodies with an introduction to nonlinear dynamics and the vibration of continuous systems. Topics include: conservation of linear and angular momentum, superposition applied to linear systems, motion in inertial and noninertial frames of reference, Hamilton's principle and Lagrange's equations, and generalized coordinates. C-L: Civil Engineering 210. 3 units. *Hall or Knight*

**211. Theoretical and Applied Polymer Science.** An advanced course in materials science and engineering dealing specifically with the structure and properties of polymers. Particular attention paid to recent developments in the processing and use of modern plastics and fibers. Product design considered in terms of polymer structures, processing techniques, and properties. C-L: Biomedical Engineering 208. 3 units. *Pearsall*

**212. Electronic Materials.** An advanced course in materials science and engineering dealing with the various materials important for solid-state electronics including semiconductors, ceramics, and polymers. Emphasis on thermodynamic concepts and on defects in these materials. Materials preparation and modification methods for technological applications. Prerequisite: Engineering 83L. 3 units. *Tan*

**213. Physical Metallurgy.** An advanced materials science course focusing on the relationships between structure and properties in metals and alloys. Conceptual and mathematical models developed and analyzed for crystal structures, elastic and plastic



deformation, phase transformations, thermodynamic behavior, and electrical and magnetic properties. Prerequisites: Engineering 83L and Mechanical Engineering 101L. 3 units. *Pearsall*

**214. Corrosion and Corrosion Control.** Environmental aspects of the design and utilization of modern engineering alloys. Theory and mechanisms of corrosion, particularly in seawater and atmospheric environments. Microstructural aspects of diffusion, oxidation, hot corrosion, and stress corrosion. Prerequisite: Engineering 83L. 3 units. *Jones*

**215. Biomedical Materials and Artificial Organs.** Prerequisite: Biomedical Engineering 83L, Chemistry 151L or Engineering 83L or consent of instructor. See C-L: Biomedical Engineering 215. 3 units. *Reichert*

**216. Mechanical Metallurgy.** An advanced materials science course dealing with the response of materials to applied forces. Mechanical fundamentals; stress-strain relationships for elastic behavior; theory of plasticity. Metallurgical fundamentals; plastic deformation, dislocation theory; strengthening mechanisms. Mechanical behavior of polymers. Applications to materials testing. Prerequisites: Engineering 75L and Engineering 083L. 3 units. *Jones*

**217. Fracture of Engineering Materials.** Conventional design concepts and their relationship to the occurrence of fracture. Linear elastic and general yield fracture mechanics. Microscopic plastic deformation and crack propagation. The relationship between macroscopic and microscopic aspects of fracture. Time dependent fracture. Fracture of specific materials. Prerequisites: Engineering 83L and Mechanical Engineering 115L. 3 units. *Jones*

**218. Thermodynamics of Electronic Materials.** Basic thermodynamic concepts applied to solid state materials with emphasis on technologically relevant electronic materials such as silicon and GaAs. Thermodynamic functions, phase diagrams, solubilities and thermal equilibrium concentrations of point defects; nonequilibrium processes and the kinetic phenomena of diffusion, precipitation, and growth. 3 units. *Tan*

**221. Compressible Fluid Flow.** Basic concepts of the flow of gases from the subsonic to the hypersonic regime. One-dimensional wave motion, the acoustic equations, and waves of finite amplitude. Effects of area change, friction, heat transfer, and shock on one-dimensional flow. Moving and oblique shock waves and Prandtl-Meyer expansion. 3 units. *Shaughnessy*

**225. Mechanics of Viscous Fluids.** Equations of motion for a viscous fluid, general properties and selected solutions of the Navier-Stokes equations, the Stokes equations, laminar boundary layer equations with selected solutions and approximation techniques, origin of turbulence. 3 units. *Hochmuth*

**226. Intermediate Fluid Mechanics.** A survey of the principal concepts and equations of fluid mechanics, fluid statics, surface tension, the Eulerian and Lagrangian description, kinematics, Reynolds transport theorem, the differential and integral equations of motion, constitutive equations for a Newtonian fluid, the Navier-Stokes equations, and boundary conditions on velocity and stress at material interfaces. 3 units. *Shaughnessy or Thompson*

**227. Advanced Fluid Mechanics.** Flow of a uniform incompressible viscous fluid. Exact solutions to the Navier-Stokes equation. Similarity methods. Irrotational flow theory and its applications. Elements of boundary layer theory. Prerequisite: Mechanical Engineering 226 or consent of instructor. 3 units. *Shaughnessy*

**228. Lubrication.** Derivation and application of the basic governing equations for lubrication; the Reynolds equation and energy equation for thin films. Analytical and

computational solutions to the governing equations. Analysis and design of hydrostatic and hydrodynamic slider bearings and journal bearings. Introduction to the effects of fluid inertia and compressibility. Dynamic characteristics of a fluid film and effects of bearing design on dynamics of machinery. Prerequisites: Mathematics 111 and Mechanical Engineering 126L. 3 units. *Knight*

**229. Computational Fluid Mechanics and Heat Transfer.** An exposition of numerical techniques commonly used for the solution of partial differential equations encountered in engineering physics. Finite-difference schemes (which are well-suited for fluid mechanics problems); notions of accuracy, conservation, consistency, stability, and convergence. Recent applications of weighted residuals methods (Galerkin), finite-element methods, and grid generation techniques. Through specific examples, the student is guided to construct and assess the performance of the numerical scheme selected for the particular type of transport equation (parabolic, elliptic, or hyperbolic). 3 units. *Howle*

**230. Modern Control and Dynamic Systems.** Dynamic modeling of complex linear and nonlinear physical systems involving the storage and transfer of matter and energy. Unified treatment of active and passive mechanical, electrical, and fluid systems. State-space formulation of physical systems. Time and frequency-domain representation. Controllability and observability concepts. System response using analytical and computational techniques. Lyapunov method for system stability. Modification of system characteristics using feedback control and compensation. Emphasis on application of techniques to physical systems. 3 units. *Garg*

**231. Adaptive Structures: Dynamics and Control.** Integration of structural dynamics, linear systems theory, signal processing, transduction device dynamics, and control theory for modeling and design of adaptive structures. Classical and modern control approaches applied to reverberant plants. Fundamentals of adaptive feedforward control and its integration with feedback control. Presentation of a methodical design approach to adaptive systems and structures with emphasis on the physics of the system. Numerous MATLAB examples provided with course material as well as classroom and laboratory demonstrations. 3 units. *Clark*

**232. Optimal Control.** Prerequisite: Electrical Engineering 141 or equivalent. See C-L: Electrical Engineering 246. 3 units. *Bushnell*

**235. Advanced Mechanical Vibrations.** Analytical and experimental procedures applied to the design of machines and systems for adequate vibration control. Determination of eigenvalues and eigenvectors by iteration and computer techniques, transfer matrices applied to lumped and distributed systems, analytical and numerical methods of obtaining the pulse response of plane and three-dimensional multimass systems, convolution and data processing, introduction to random vibration. 3 units. *Knight or Wright*

**236. Engineering Acoustics.** Fundamentals of acoustics including sound generation, propagation, reflection, absorption, and scattering. Emphasis on basic principles and analytical methods in the description of wave motion and the characterization of sound fields. Applications including topics from noise control, sound reproduction, architectural acoustics, and aerodynamic noise. Occasional classroom or laboratory demonstration. Prerequisites: Engineering 123L and Mathematics 111 or consent of instructor. 3 units. *Bliss*

**237. Aerodynamics.** Fundamentals of aerodynamics applied to wings and bodies in subsonic and supersonic flow. Basic principles of fluid mechanics and analytical methods for aerodynamic analysis. Two- and three-dimensional wing theory, slender-body theory, lifting surface methods, vortex and wave drag. Brief introduction to vehicle



design, performance, and dynamics. Special topics such as unsteady aerodynamics, vortex wake behavior, and propeller and rotor aerodynamics. 3 units. *Bliss*

**238. Advanced Aerodynamics.** Advanced topics in aerodynamics. Conformal transformation techniques. Three-dimensional wing theory, optimal span loading for planar and nonplanar wings. Ground effect and tunnel corrections. Propeller theory. Slender wing theory and slender body theory, transonic and supersonic area rules for minimization of wave drag. Numerical methods in aerodynamics including source panel and vortex lattice methods. Prerequisite: Mechanical Engineering 237. 3 units. *Hall*

**239. Unsteady Aerodynamics.** Analytical and numerical methods for computing the unsteady aerodynamic behavior of airfoils and wings. Small disturbance approximation to the full potential equation. Unsteady vortex dynamics. Kelvin impulse and apparent mass concepts applied to unsteady flows. Two-dimensional unsteady thin airfoil theory. Time domain and frequency domain analyses of unsteady flows. Three-dimensional unsteady wing theory. Introduction to unsteady aerodynamic behavior of turbomachinery. Prerequisite: Mechanical Engineering 237. 3 units. *Hall*

**240. Patent Technology and Law.** The use of patents as a technological data base is emphasized including information retrieval in selected engineering disciplines. Fundamentals of patent law and patent office procedures. Consent of instructor required. 3 units. *Cocks*

**245. Applications in Expert Systems.** A comprehensive introduction to the key practical principles, techniques, and tools being used to implement knowledge-based systems. The classic MYCIN system studied in detail to provide historic perspective. Current systems employing combinations of production rules, prototypical knowledge, and frame-based case studies. Student term projects consist of the development of individual, unique expert systems using the Texas Instruments Personal Consultant. Knowledge of LISP not a prerequisite. 3 units. *Wright*

**252. Buckling of Engineering Structures.** Prerequisite: Civil Engineering 131L or consent of instructor. See C-L: Civil Engineering 252. 3 units. *Virgin*

**265. Advanced Topics in Mechanical Engineering.** Opportunity for study of advanced subjects related to programs within mechanical engineering tailored to fit the requirements of a small group. Approval of director of undergraduate or graduate studies required. Variable credit. *Staff*

**268. Cellular and Biosurface Engineering.** A combination of fundamental concepts in materials science, colloids, and interfaces that form a basis for characterizing: the physical properties of biopolymers, microparticles, artificial membranes, biological membranes, and cells; and the interactions of these materials at biofluid interfaces. Definition of the subject as a coherent discipline and application of its fundamental concepts to biology, medicine, and biotechnology. Prerequisite: Mechanical Engineering 208 or consent of instructor. 3 units. *Needham*

**270. Robot Control and Automation.** Review of kinematics and dynamics of robotic devices; mechanical considerations in design of automated systems and processes, hydraulic and pneumatic control of components and circuits; stability analysis of robots involving nonlinearities; robotic sensors and interfacing; flexible manufacturing; man-machine interaction and safety consideration. Prerequisites: Mechanical Engineering 230 or equivalent and consent of instructor. 3 units. *Garg*

**275. Product Safety and Design.** An advanced engineering design course that develops approaches to assessing and improving the safety of products and product systems. Safety is presented in terms of acceptable risk and analyzed through legal case



studies. Probabilistic decision making; risk economics; risk analysis and assessment. Corequisite: Mechanical Engineering 160L. 3 units. *Pearsall*

**277. Optimization Methods for Mechanical Design.** Definition of optimal design. Methodology of constructing quantitative mathematical models. Nonlinear programming methods for finding "best" combination of design variables: minimizing steps, gradient methods, flexible tolerance techniques for unconstrained and constrained problems. Emphasis on computer applications and term projects. Consent of instructor required. 3 units. *Wright*

**280. Convective Heat Transfer.** Models and equations for fluid motion, the general energy equation, and transport properties. Exact, approximate, and boundary layer solutions for laminar flow heat transfer problems. Use of the principle of similarity and analogy in the solution of turbulent flow heat transfer. Two-phase flow, nucleation, boiling, and condensation heat and mass transfer. 3 units. *Bejan*

**281. Fundamentals of Heat Conduction.** Fourier heat conduction. Solution methods including separation of variables, transform calculus, complex variables. Green's function will be introduced to solve transient and steady-state heat conduction problems in rectangular, cylindrical, and spherical coordinates. Microscopic heat conduction mechanisms, thermophysical properties, Boltzmann transport equation. Prerequisite: Mathematics 111 or consent of instructor. 3 units. *Bejan or Chen*

**282. Fundamentals of Thermal Radiation.** Radiative properties of materials, radiation-materials interaction and radiative energy transfer. Emphasis on fundamental concepts including energy levels and electromagnetic waves as well as analytical methods for calculating radiative properties and radiation transfer in absorbing, emitting, and scattering media. Applications cover laser-material interactions in addition to traditional areas such as combustion and thermal insulation. Prerequisite: Mathematics 111 or consent of instructor. 3 units. *Chen*

**290. Physical Oceanography.** Introduction to the dynamic principles of ocean circulation with an emphasis on large temporal and spatial scales of motion. Topics include wind-driven and density-driven flow, western boundary intensification, mid-ocean, shelf, and tropical circulations. Corequisite: Geology 250. Prerequisites: Mathematics 31 and 32 or consent of instructor. C-L: Environment 290 and Geology 203. 3 units. *Lozier*

**325. Aeroelasticity.** A study of the statics and dynamics of fluid/structural interaction. Topics covered include static aeroelasticity (divergence, control surface reversal), dynamic aeroelasticity (flutter, gust response), unsteady aerodynamics (subsonic, supersonic, and transonic flow), and a review of the recent literature including nonlinear effects such as chaotic oscillations. Prerequisites: Mathematics 230 and consent of instructor. 3 units. *Dowell*

**331. Nonlinear Control Systems.** Analytical, computational, and graphical techniques for solution of nonlinear systems; Krylov and Bogoliubov asymptotic method; describing function techniques for analysis and design; Liapounov functions and Lure's methods for stability analysis; Aizerman and Kalman conjectures; Popov, circle, and other frequency-domain stability criteria for analysis and synthesis. Prerequisite: Mechanical Engineering 230 or consent of instructor. 3 units. *Garg or Wright*

**335. Nonlinear Mechanical Vibration.** A comprehensive treatment of the role of nonlinearities in engineering dynamics and vibration. Analytical, numerical, and experimental techniques are developed within a geometrical framework. Prerequisite: Mechanical Engineering 210 or 235 or equivalent. 3 units. *Virgin*

**399. Special Readings in Mechanical Engineering.** Individual readings in advanced study and research areas of mechanical engineering. Approval of director of graduate studies required. 1 to 3 units. Variable credit. *Staff*

## **COURSES CURRENTLY UNSCHEDULED**

**224. An Introduction to Turbulence**

**322. Mechanics of Viscous Fluids**

## **English**

Professor Torgovnick, *Chair* (312 Allen); Associate Professor Moon, *Director of Graduate Studies* (316 Allen); Professors Aers, Applewhite, Butters, Clum, C. Davidson, DeNeef, Fish, Gleckner, Goldberg, Holloway, Jackson, Lentricchia, Porter, Price, Randall, Ryals, Sedgwick, Smith, Strandberg, Tompkins, and Williams; Professor of the Practice Gopen; Associate Professors Beckwith, Ferraro, Gaines, Gerber, Jones, Mellown, Moses, Pope, Tetel, and Willis; Associate Professors of the Practice Cox and Malouf; Assistant Professors Chandler, Clarke, Pfau, Shannon, and Thorn; Assistant Professor of the Practice Hillard; Adjunct Professor A. E. Davidson

The department offers graduate work leading to the A.M. and Ph.D. degrees, although only students seeking the doctorate are admitted to the department. The A.M. degree, if not already earned elsewhere, may be taken by students en route to the Ph.D. (although it is not required) and by those who elect to leave the doctoral program. The department requires completion of a minimum of eleven courses, a reading proficiency of at least one foreign language (the specific language to be determined by the student's major areas of academic concentration), a preliminary examination of three subfields (one major, two minor) which consists of both a written and oral part, and a dissertation chapter meeting with the thesis committee by the end of the third year of study.

The interests of the English department faculty range historically from medieval and Renaissance to postmodern and postcolonial literatures. Methodological approaches encompass historicist and new historicist, text-based, feminist, cultural materialist, legal, and gay and lesbian criticism. Faculty research engages related disciplines such as film and visual, African American, cultural, and ethnic studies. The principal concern of members of the English department faculty nonetheless remains the training of new scholars, teachers, and critics in both traditional and noncanonical fields of literary study. Recent surveys by the National Research Council and *U.S. News and World Report* rank the graduate program among the top five in the nation, and as a leading program in the fields of critical theory, Third World literature, and nineteenth- and twentieth-century American literature.

### **For Seniors and Graduates**

**202S. Narrative Writing.** The writing of short stories, memoirs, tales, and other narrations. Readings from ancient and modern narrative. Close discussion of frequent submissions by class members. Consent of instructor required. 3 units. *Porter and Price*

**203S. Advanced Narrative Writing.** The writing of extended narrative prose—long stories, novellas, substantive memoirs. Students should be proficient in the writing of short narratives. Consent of instructor required. 3 units. *Porter or Price*

**208. History of the English Language.** Introductory survey of the changes in sounds, forms, and vocabulary of the English language from its beginning to the present, with emphasis on the evolution of the language as a medium of literary expression. Not open to students who have taken English 112. C-L: Medieval and Renaissance Studies. 3 units. *Butters or Tetel*

**212. Middle English Literature: 1100 to 1500.** Selected topics. C-L: Medieval and Renaissance Studies. 3 units. *Aers or Beckwith*

**220. Shakespeare: Selected Topics.** 3 units. *Goldberg, Porter, or Shannon*

**221. Renaissance Prose and Poetry: 1500 to 1660.** Selected topics. C-L: Medieval and Renaissance Studies. 3 units. *DeNeef, Fish, Goldberg, Randall, or Shannon*

**225. Renaissance Drama: 1500 to 1642.** Selected topics. C-L: Medieval and Renaissance Studies. 3 units. *Goldberg, Porter, Randall, or Shannon*

**235. Restoration and Eighteenth-Century Literature: 1660 to 1800.** Selected topics. 3 units. *Jackson or Thorn*

**241. Romantic Literature: 1790 to 1830.** Selected topics. 3 units. *Applewhite, Gleckner, Jackson, or Pfau*

**245. Victorian Literature: 1830 to 1900.** Selected topics. 3 units. *Moses, Ryals, or Sedgwick*

**251. British Literature since 1900.** Selected topics. 3 units. *Lentricchia, Mellown, Moses, or Torgovnick*

**263. American Literature to 1865.** Selected topics. 3 units. *C. Davidson, Jones, Moon, or Tompkins*

**267. American Literature: 1865 to 1915.** Selected topics. 3 units. *C. Davidson, Moon, Tompkins, or K. Williams*

**275. American Literature since 1915.** Selected topics. 3 units. *Ferraro, Lentricchia, Pope, Strandberg, or Torgovnick*

**281. Studies in Genre.** History, criticism, and theory of literary genres such as the novel, pastoral, epic, and drama. 3 units. *Staff*

**284. Contemporary Film Theory.** Post-1968 film theory—Brechtian aesthetics, cinema semiotics, psychoanalytic film theory, technology, feminist theory, and Third World cinema. 3 units. *Gaines*

**285. Major Texts in the History of Literary Criticism.** A survey of major critical writings from Aristotle to the present. 3 units. *Staff*

**288. Special Topics.** Subjects, areas, or themes that cut across historical eras, several national literatures, or genres. 3 units. *Staff*

**289. The Theory of the Novel.** Major issues in the history and theory of the novel. 3 units. *Torgovnick*

**290. Methods of Composition Pedagogy.** A philosophical and practical exploration of developments in the field of composition studies. Cognition, concept formation, psycholinguistics, interpretation, and the making of meaning. Works by Burke, Richards, Kitzhaber, Berlin, Berthoff, Bizzell, Elbow, Corbett, Macrorie, Williams, Coles, and others. 3 units. *Gopen or Hillard*

## **For Graduates**

**312. Studies in Middle English Literature.** C-L: Medieval and Renaissance Studies. 3 units. *Aers or Beckwith*

**315. Studies in Chaucer.** C-L: Medieval and Renaissance Studies. 3 units. *Aers or Beckwith*



- 321. Studies in Renaissance Literature.** C-L: Medieval and Renaissance Studies and Women's Studies. 3 units. *DeNeef, Fish, Goldberg, Porter, Randall, or Shannon*
- 324. Studies in Shakespeare.** C-L: Medieval and Renaissance Studies. 3 units. *Goldberg, Porter, or Shannon*
- 329. Studies in Milton.** C-L: Medieval and Renaissance Studies. 3 units. *Aers, DeNeef, or Fish*
- 337. Studies in Augustanism.** 3 units. *Jackson or Thorn*
- 338. Studies in a Major Augustan Author.** 3 units. *Jackson or Thorn*
- 341. Studies in Romanticism.** 3 units. *Applewhite, Gleckner, Jackson, or Pfau*
- 347. Studies in Victorianism.** 3 units. *Moses, Ryals, or Sedgwick*
- 348. Studies in a Major Nineteenth-Century British Author.** 3 units. *Gleckner, Jackson, Pfau, Ryals, or Sedgwick*
- 353. Studies in Modern British Literature.** 3 units. *Mellow, Moses, or Torgovnick*
- 361. Studies in American Literature before 1915.** 3 units. *Chandler, Clarke, Holloway, Jones, Moon, Tompkins, or K. Williams*
- 368. Studies in a Major American Author before 1915.** 3 units. *Chandler, Clarke, C. Davidson, Ferraro, Holloway, Jones, Moon, Tompkins, or K. Williams*
- 375. Studies in Modern American Literature.** 3 units. *Applewhite, Chandler, Clarke, Ferraro, Holloway, Lentricchia, or Strandberg*
- 376. Studies in a Modern Author (British or American).** 3 units. *Staff*
- 381. Special Topics Seminar.** 3 units. *Staff*
- 385. Studies in Literary Criticism.** 3 units. *Graduate faculty*
- 386. Problems in the Theory of Value and Judgment.** See C-L: Literature 300; also C-L: Philosophy 300. 3 units. *Smith*
- 388. The History of Rhetoric: Classical to Renaissance.** The foundations of rhetorical studies from Plato, Aristotle, Cicero, and Quintilian through Longinus, Augustine, and Erasmus to Bacon and Ramus. No prerequisites. 3 units. *Gopen or Hillard*
- 389. The History of Rhetoric: Eighteenth to Twentieth Centuries.** Continuing study of the major texts in the history of rhetoric with special attention paid to J. Q. Adams, Campbell, Blair, Whately, Bain, Perelman, and Burke. Prerequisite: English 388. 3 units. *Gopen or Hillard*
- 390. Composition Theory and Pedagogy.** Methodologies of teaching composition, with special emphasis on the theories of structural stylistics employed in the University Writing Program (UWP). All students registering in the course must hold a tutorship in the UWP, must attend the UWP training seminar and all scheduled UWP staff meetings, and will be observed teaching by a UWP director. Ungraded. 3 units. *Gopen or Hillard*
- 391. Tutorial in Special Topics.** Directed research and writing in areas unrepresented by regular course offerings. Consent of instructor required. 3 units. *Graduate faculty*
- 392. Tutorial in Journal Editing.** Systematic exposure to all phases of academic journal editing. Restricted to holders of journal editing internships. Ungraded. Variable credit. *Graduate faculty*

## COURSES CURRENTLY UNSCHEDULED

- 205. Semiotics and Linguistics
- 207A. Introduction to Old English
- 207B. Old English Literature
- 209. Present-Day English
- 213, 214. Chaucer
- 222. Reading Milton
- 269. American Women Writers
- 310. Studies in Old English Literature
- 383. Studies in Textual Criticism
- 393. Professionalism, Theory, and Power in Legal and Literary Studies

## TUTORIALS

Tutorials in specialized subjects of study not available in the courses listed above may be offered to single students or to small groups. Instruction normally will be conducted in weekly sessions, or more frequently if the instructor wishes. Emphasis will be on independent reading and investigation, and on oral and written reports. A substantial amount of writing will be required.

Permission of the instructor and the director of graduate studies is required.

## Environment

Norman Christensen, *Dean*; Professor Knoerr, *Director of Graduate Studies* (A309A Levine Science Research Center); Professors Barber, C. Bonaventura, J. Bonaventura, Brouwer, Crowder, Forward, Healy, Orbach, Pilkey, Ramus, Reckhow, Richardson, Schlesinger, V. K. Smith, Terborgh, and Vesilind; Associate Professors Di Giulio, Kirby-Smith, R. Kramer, Lavine, Maguire, Oren, Richter, Rittschof, Sigmon, van Schaik, Wiener, and Wolpert; Assistant Professors Ahmann, Faust, Freedman, Howd, Katul, Lozier, Mansfield, Read, Rojstaczer, and Urban; Professors Emeriti Anderson, Bookhout, Costlow, Dutrow, Jayne, Osborne, Stambaugh, and Yoho; Adjunct Professors Adams, Boyce, Cubbage, Dieter, Heath, Sharma, Sizemore, and Steen; Adjunct Associate Professor Tulis; Adjunct Assistant Professors Holmes, Vandenberg, and Wear

Major and minor work is offered in the areas of natural resource and environmental science/ecology, systems science, and economics/policy. College graduates who have a bachelor's degree in one of the natural or social sciences, forestry, engineering, business, or environmental science will be considered for admission to a degree program. Students will be restricted to the particular fields of specialization for which they are qualified academically. Graduate School programs usually concentrate on some area of natural resource and environmental science/ecology, systems science, or economics/policy, while study in resource and environmental management is more commonly followed in one of the professional master's degree programs of the School of the Environment. For more complete program descriptions and information on professional training in forestry or environmental studies, the *Bulletin of Duke University: School of the Environment* should be consulted.

School of the Environment faculty normally accept to the academic degree program only those students who wish to pursue a Ph.D. degree. The M.A. degree is available for students enrolled in the joint law program, and the M.S. degree may be awarded as part of the doctoral program. Students generally are not admitted to the M.A. and M.S.

tracks as stand alone programs. Students may be required to demonstrate satisfactory knowledge of one or two foreign languages for the Ph.D. degree.

**200. Integrated Case Studies.** A group of two to four students may plan and conduct integrated research projects on a special topic, not normally covered by courses or seminars. A request to establish such a project should be addressed to the case studies director with an outline of the objectives and methods of study and a plan for presentation of the results to the school. Each participant's adviser will designate the units to be earned (up to six units) and evaluate and grade the work. Variable credit. *Staff*

**201. Forest Resources Field Skills.** Introduction to field techniques commonly used to quantify and sample forest resources: trees, soils, water, and animal resources. Dendrology, vegetation sampling, soil mapping, river flow estimation, field water quality sampling, surveying, and use of compass. 2 units. *Davison and Richter*

**204. Forest Inventory, Growth, and Yield.** Measurement of land and forests for purposes of management, appraisal, purchase, and sale. Techniques for predicting the growth and future yield of stands by various methods. 3 units. *Davison*

**205. Ecological Management of Forest Systems (Silviculture).** The aim of the course is to equip future resource managers and environmental consultants with knowledge allowing them to propose lower impact practices to individuals and organizations who need to balance wood production with maintenance of environmental quality. Underlying principles of growth, from seed to mature trees, and stand dynamics are explored. Various alternative methods of manipulating growth, stand structure and development, ranging from little to large perturbations of forest systems, are presented and assessed in terms of their effect on resource quality. 3 units. *Oren*

**205L. Ecological Management of Forest Systems (Silviculture).** Same as 205 with laboratory. 4 units. *Oren*

**207. Forest Pest Management.** Fundamentals of entomology and plant pathology as appropriate to understanding the impacts of insects and diseases on forest productivity and their assessment for integration into forest management. Regional case examples and complexes are evaluated in terms of pest-population, forest-stand dynamics; economic and societal constraints; treatment strategies; monitoring systems; and benefit-cost analysis. This approach seeks to develop predictive capabilities in long-range pest management and decision making. 3 units. *Stambaugh*

**207L. Forest Pest Management.** Same as 207 with laboratory which is largely field oriented to focus on diagnostics and impact analysis. 4 units. *Stambaugh*

**208L. Estuarine Ecosystems Processes.** A study of the physical, chemical, and biological processes that control the structure of estuarine communities. Emphasis on field and laboratory techniques and data interpretation. (Given at Beaufort.) Prerequisite: ecology, systematics, or field biology course or consent of instructor. C-L: Marine Sciences. 4 units. *Kirby-Smith*

**211. Applied Ecology and Ecosystem Management.** An application of ecological principles to applied resource and environmental problems with an emphasis on the ecosystem as a basic working unit. Perspectives include such topics as land/water interactions, the patchiness concept, succession, energy flow, productivity, mineral cycling, perturbation effects on ecosystems, and limiting factors. Prerequisites: introductory courses in biology and ecology. 3 units. *Richardson*

**212. Environmental Toxicology.** Study of environmental contaminants from a broad perspective encompassing biochemical, ecological, and toxicological principles and methodologies. Discussion of sources, environmental transport and transformation phenomena, accumulation in biota and ecosystems. Impacts at various levels of organi-



zation, particularly biochemical and physiological effects. Prerequisites: organic chemistry and vertebrate physiology or consent of instructor. 3 units. *Di Giulio*

**213. Forest Ecosystems.** Emphasis on the processes by which forests circulate, transform, and accumulate energy and materials through interactions of biologic organisms and the forest environment. Ecosystem productivity and cycling of carbon, water, and nutrients provide the basis for lecture and laboratory. 3 units. *Richter*

**214. Landscape Ecology.** Emphasis on the role of spatial heterogeneity in terrestrial systems: its detection and description, agents of pattern formation, landscape dynamics and models, and the implications of heterogeneity of populations, communities, and ecosystems. Prerequisites: equivalents of Environment 211, 251, and 351, or consent of instructor. 3 units. *Urban*

**215. Environmental Physiology.** Examination of tolerance, limiting factors, nutrition, and other ecological physiology concepts used in evaluating plant responses to multiple environmental stresses. Discussion of procedures for and examples of monitoring physiological responses to environmental perturbations and resource manipulation. 2 units. *Oren*

**216. Applied Population Ecology.** Population dynamics of managed and unmanaged populations. A quantitative approach to exploitation and conservation of animal and plant populations, including harvesting, population viability analysis, population genetics. Prerequisites: introductory statistics, calculus, and computer programming or consent of instructor. 3 units. *Maguire*

**217. Tropical Ecology.** Ecosystem, community, and population ecology of tropical plants and animals with application to conservation and sustainable development. Prerequisite: a course in general ecology. C-L: Botany 215 and Zoology 215. 3 units. *Terborgh*

**218L. Barrier Island Ecology.** An integration of barrier island plant and animal ecology within the context of geomorphological change and human disturbance. Topics include: barrier island formation and migration, plant and animal adaptations, species interactions, dune succession, maritime forests, salt marshes, sea level rise, conservation policy, and restoration ecology. Field trips to many of the major North Carolina barrier islands. Strong emphasis on field observation and independent research. (Given at Beaufort.) Prerequisite: Biology 25L or equivalent; suggested: course in botany or ecology. C-L: Botany 218L and Marine Sciences. 6 units. *Evans, Peterson, and Wells (visiting summer faculty)*

**219L. Marine Ecology.** Factors that influence the distribution, abundance, and diversity of marine organisms. Course structure integrates lectures, field excursions, and independent research projects. Topics include characteristics of marine habitats, adaptation to environment, species interactions, biogeography, larval recruitment, rocky shores, marine mammals, fouling communities, tidal flats, beaches, subtidal communities, and coral reefs. Four units (fall and spring); six units (summer). (Given at Beaufort.) Prerequisite: none; suggested—introductory ecology, invertebrate zoology, or marine botany. C-L: Marine Sciences and Zoology 203L. Variable credit. *Staff*

**220. Vegetation Management in Urban Ecosystems (Urban Forestry).** Biology and management of woody vegetation, especially trees, across the urban-forest continuum. Special uses and problems of the urban forest are discussed in terms of socioeconomic, legal, arboricultural, and environmental considerations. Management case studies and field trips will be used to gain insights into tree valuation, inventory, and municipal ordinances and administration. 3 units. *Stambaugh*

**221. Soil Resources.** Emphasis on soil resources as central components of terrestrial ecosystems, as rooting environments for plants, and as porous media for water. Soil physics and chemistry provide the basis for the special problems examined through the course. Laboratory emphasizes field and lab skills, interpretive and analytical. 3 units. *Richter*

**222L. Physical Processes in Coastal Environments.** The physical processes on beaches, the inner continental shelf, and in estuaries, in the context of their implications for the biological and geological environments. Topics to be drawn from the origin of waves and currents, tides, turbulence and mixing transport of sand and larvae. Applications to biomechanics and coastal erosion, and to marine ecology, coastal zone management, and water quality. (Given at Beaufort.) Prerequisites: Mathematics 31 and 32. C-L: Geology 201L and Marine Sciences. 4 units. *Howd*

**223L. Behavioral Ecology.** How ecological factors shape foraging, mating, aggressive, and social behavior. Laboratory experiments and field observations from the Outer Banks environment. Independent projects and seminars. Not open to undergraduates. (Given at Beaufort.) Prerequisite: introductory biology (Biology 25L). C-L: Marine Sciences and Zoology 213L. 6 units. *Rubenstein (visiting summer faculty)*

**225L. Coastal Ecotoxicology and Pollution.** Principles of transport, fates, food-web dynamics and biological effects of pollutants in the marine environment. Laboratory to stress standard techniques for assessing pollutant levels and effects. (Given at Beaufort.) Prerequisites: introductory chemistry and biology. C-L: Marine Sciences. 4 units. *Kenney*

**226. Marine Mammals.** Ecology, social organization, behavior, acoustic communication, and management issues. Focused on marine mammals in the southeastern United States (for example, bottlenose dolphin, right whale, West Indian manatee). Only open to undergraduates under Biology 126. (Given at Beaufort.) Prerequisite: introductory biology. C-L: Marine Sciences. 3 units. *Read or staff*

**226L. Marine Mammals.** Same as Environment 226 with laboratory. Laboratory exercises will consider social organization and acoustic communication in the local bottlenose dolphin population. (Given at Beaufort.) Prerequisite: introductory biology. C-L: Marine Sciences. 4 units. *Read or staff*

**228L. Physiology of Marine Animals.** Environmental factors, biological rhythms, and behavioral adaptations in the comparative physiology of marine animals. Not open to undergraduates. Four units (fall); six units (summer). (Given at Beaufort.) Prerequisites: introductory biology and chemistry. C-L: Marine Sciences. Variable credit. *Forward*

**229L. Biochemistry of Marine Animals.** Functional, structural, and evolutionary relationships of biochemical processes of importance to marine organisms. Not open to undergraduates. Four units (fall and spring); six units (summer). (Given at Beaufort.) Prerequisite: Biology 25L; Chemistry 11L, 12L. C-L: Marine Sciences. Variable credit. *Rittschof*

**230L. Weather and Climate.** Overview of the science of meteorology and principles of climatology, especially as applied to problems in ecology and natural resource management. Emphasis on the processes and characteristics of weather phenomena and local and regional climates. General introduction to sources of climatic data and climatic data analysis. Includes laboratory. 4 units. *Knoerr*

**232. Microclimatology.** Introduction to the micrometeorological processes. Discussion of the integration of these processes and the resulting microclimates in the rural (forest, field, and water surface) and urban environments. Methods for modification of the microclimate. Offered on demand. C-L: Botany 232. 3 units. *Knoerr*



**234L. Watershed Hydrology.** Introduction to the hydrologic cycle with emphasis on the influence of land use, vegetation, soil types, climate, and land forms on water quantity and quality and methods for control. Development of water balance models. Analysis of precipitation patterns, rainfall and runoff, and nonpoint source impacts. Statistical handling and preparation of hydrologic data, simulation and prediction models, introduction to groundwater flow, laboratory and field sampling methods. 4 units. *Katul*

**235. Air Quality Management.** Types, sources, effects of air pollutants. Regulatory framework emphasizing the Clean Air Act Amendments of 1990 and federal, state, local agency implementation. Application of risk assessment, technology, market incentives to air management. Scientific, policy aspects of acid deposition, global climate change, indoor air, mobile sources control. Dispersion modeling, exposure assessment. 3 units. *Vandenberg*

**236. Water Quality Management.** Types, sources, and effects of pollutants. Water quality standards and criteria. Engineering approaches to water management. Mathematical models and their application to water quality management. Federal regulations, in particular, the Federal Water Pollution Control Act and the Safe Drinking Water Act. Policy analysis for water quality management planning. 3 units. *Reckhow*

**240. Fate of Organic Chemicals in the Aquatic Environment.** Kinetic, equilibrium, and analytical approaches applied to quantitative description of processes affecting the fate of anthropogenic and natural organic compounds in surface and groundwaters and in selected treatment processes, including sorption phenomena, gas transfer, hydrolysis, photochemistry, oxidation-reduction, and biodegradation. Sampling, detection, identification, and quantification of organic compounds in the environment. Gas and liquid chromatography and mass spectrometry. Prerequisites: university-level general chemistry and organic chemistry within last four years. C-L: Civil Engineering 240. 3 units. *Dubay and Faust*

**241. Atmospheric Chemistry and Air Pollution.** Chemical kinetics and equilibrium applied to the mechanistic and quantitative description of processes affecting the fates of anthropogenic and natural chemicals in the troposphere, on local, regional, and global scales. Direct photolysis; gas-phase photo-formation and fates of ozone, radicals, and other oxidants; gas-phase oxidations of volatile organic compounds; gas-to-drop partitioning; aqueous-phase photoformation and fates of hydrogen peroxide, radicals, and other oxidants in the aqueous phases of clouds, fogs, and aerosols; effects of aqueous-phase reactions on the chemical composition of the troposphere; gas-phase and aqueous-phase oxidations of organic and inorganic compounds; stratospheric ozone depletion. Prerequisites: university-level general chemistry and organic chemistry within last four years. C-L: Civil Engineering 241. 3 units. *Faust*

**242. Environmental Aquatic Chemistry.** Principles of chemical kinetics and equilibria applied to quantitative description of the chemistry of lakes, rivers, oceans, groundwaters, and selected treatment processes. Equilibrium, steady state, and other kinetic models applied to processes such as the carbonate system, coordination chemistry, precipitation and dissolution, oxidation-reduction, photochemistry, adsorption, and heterogeneous reactions. Prerequisite: university-level general chemistry within last four years. C-L: Civil Engineering 242. 3 units. *Faust*

**243. Environmental Biochemistry.** Introduction to the (macro)molecules of life and fundamental metabolic pathways. Topics are presented in the context of environmental perturbations. Fundamental aspects of energetics, proteins, enzymes, carbohydrates, lipids, and nucleic acids. Emphasis on mechanisms of adaptation, molecular controls, and responses to toxicants. (Given at Beaufort.) Prerequisite: organic chemistry. C-L: Cell Biology 243 and Marine Sciences. 3 units. *C. Bonaventura*



**244L. Molecular and Cellular Processes in Marine Organisms.** Joint research projects on the adverse effects of environmental pollutants on marine organisms at the cellular and molecular level. Research methodologies include: spectroscopy (UV/VIS, fluorescence, and atomic absorption); subcellular fractionation; protein purification and characterization using chromatography and electrophoresis; analysis of pollutant-induced damage to proteins, membranes, and DNA; measurement of activity of enzymatic defense systems. Lectures cover molecular mechanisms of damage and damage control, and concepts that underlie the methods to be used. (Given at Beaufort.) Prerequisite: organic chemistry. C-L: Cell Biology 244L and Marine Sciences. 4 units. *Bonaventura, C. and Brouwer*

**245. Ecology of Microorganisms.** Factors affecting the abundance, distribution, and behavior of microorganisms. Topics include microbial form and function, activities in the environment, and applications to current environmental issues. 3 units. *Staff*

**246. Survey of Occupational Health and Safety.** Occupational risks associated with biological, chemical, ergonomic, radiation, and toxic hazards. The nature and scope of occupational hazards, health effects, and risk assessment and management strategies. Open to undergraduates by consent. 3 units. *Staff*

**247. Survey of Environmental Health and Safety.** Environmental risks from the perspective of global ecology, biology, chemistry, and radiation. The nature and scope of environmental hazards, environmental impacts and health effects, and risk assessment and management strategies. Open to undergraduates by consent. 3 units. *Staff*

**248. Solid Waste Engineering.** Engineering design of material and energy recovery systems including traditional and advanced technologies. Sanitary landfills and incineration of solid wastes. Application of systems analysis to collection of municipal refuse. Major design project in solid waste management. Prerequisite: Civil Engineering 124L or consent of instructor. C-L: Civil Engineering 248. 3 units. *Vesilind*

**249. Environmental Molecular Biology.** An introduction to molecular techniques and gene regulation as they apply to environmental issues. Topics include basic cloning strategies and methods, DNA/RNA/protein separation and hybridization, polymerase chain reaction, *in vitro* mutagenesis and protein expression. Student presentations illustrate how molecular technologies such as the creation of genetically engineered organisms address environmental problems. Prerequisite: introductory biology. 3 units. *Freedman*

**251. Statistics and Data Analysis in Biological Science.** Elements of statistical inference and estimation including exploratory data analysis, regression, and analysis of variance. Emphasis on biological science applications. Not open to students who have had Mathematics 136 or Statistics 110A, 110B, 112, 113, 114, 210A, or 213. C-L: Statistics 210B. 3 units. *Staff*

**252L. Statistics and Data Analysis in Earth and Ocean Science.** Techniques commonly used by earth and ocean scientists for the analysis of spatial and/or temporal series of data. Topics include regression, Fourier analysis, nonparametric spectral analysis, and, perhaps, principal components analysis and parametric spectral estimators. (Given at Beaufort.) Prerequisites: Mathematics 31 and 32, Statistics 110 or 112, or consent of instructor. C-L: Geology 222L and Marine Sciences. 4 units. *Howd*

**253. Environmental Applications of Biometry.** Overview of statistical methods frequently used for the analysis of experiments in organismal and field biology. Topics include nonparametric statistical methods, analysis of frequencies, probit analysis of dose-response data, and the identification and application of statistical methods for specialized needs. Prerequisite: Environment 251 or equivalent. 3 units. *Gerhart*

**255. Applied Regression Analysis.** Linear regression using both graphical and numerical methods. Model construction, critique, and correction using graphical residual analysis. One-way and two-way analysis of variance; introduction to design of experiments. Use of a standard statistical software package. Applications and examples drawn from various sources, emphasizing the biological and environmental sciences. Prerequisite: Statistics 210B or equivalent. C-L: Statistics 242. 3 units. *Staff*

**256S. Seminar in Ocean Sciences.** Biological, chemical, physical, and geological aspects of the ocean and their relation to environmental issues. Consent of instructor required. (Given at Beaufort.) C-L: Marine Sciences. 2 units. *Staff*

**261. Remote Sensing for Resource Management.** An examination of remote sensing systems as sources of information in resource management with an emphasis on aerial photography and multispectral scanners. Emphasis on the interpretation of airborne and space imagery. 3 units. *Davison*

**262. Forest Utilization Field Trip.** Introduction to utilization in the managed forest and the principal wood-using industries. Taught as a one-week field seminar. May be taken by nonforestry majors. 1 unit. *Staff*

**263. Environmental Economics: Theory and Application.** Role of materials and energy balances in modeling production and consumption; externalities and Pigouvian taxes; property rights and open access resources; role of market structure; design of policy instruments and actual practice; contrasts between domestic and international environmental policies. Prerequisite: Economics 149. C-L: Economics 263. 3 units. *Smith*

**264. Applied Differential Equations in Environmental Sciences.** General calculus and analytic geometry review; numerical differentiation and integration; analytic and exact methods for first and second order ordinary differential equations (ODE); introduction to higher order linear ODE, numerical integration of ODEs and systems of ODEs; extension of Euler's method to partial differential equations (PDE) with special emphasis on parabolic PDE. Example applications include population forecasting, soil-plant-atmosphere water flow models, ground water and heat flow in soils, and diffusion of gases from leaves into the atmosphere. Prerequisite: Mathematics 31 or equivalent or consent of instructor. 2 units. *Katul*

**266. Ecology of Southern Appalachian Forests.** Field trips to various forest ecosystems in the southern Appalachian Mountains. Species identification, major forest types, field sampling, and history of effects of human activities. Consent of instructor required. 1 unit. *Richter*

**267S. Conservation Biology of Marine Mammals.** Examination of issues affecting the conservation of marine mammal populations, including: habitat loss and degradation, interactions with commercial fisheries, and direct harvests. Consent of instructor required. (Given at Beaufort.) C-L: Marine Sciences. 2 units. *Read*

**268. Advanced Topics in Nearshore Processes.** Advanced treatment of fluid processes in the nearshore. Topics drawn from nonlinear wave theory, radiation stresses and their gradients, forced and free infragravity waves, and the origins of mean currents in the surf zone. Other topics following students' interests. (Given at Beaufort.) Prerequisite: Environment 290, Mathematics 111 or 114, or consent of instructor. C-L: Geology 204 and Marine Sciences. 3 units. *Howd*

**269S. Advanced Topics in Marine Ecology.** Theoretical concepts from population, community, and evolutionary ecology will be linked to observations and experiments to enhance understanding of the structure and function of marine systems. Current topics in marine ecology (for example, marine food web dynamics, species interactions, life history strategies, fisheries ecology, conservation biology). Discussions will be based



on readings from the primary literature with emphasis on developing critical and synthetic skills. Each student will prepare a research proposal in NSF format. May be repeated. (Given at Beaufort.) C-L: Marine Sciences. 2 units. *Crowder*

**270L. Resource and Environmental Economics.** The application of economic concepts to private- and public-sector decision making concerning natural and environmental resources. Intertemporal resource allocation, benefit-cost analysis, valuation of environmental goods and policy concepts. Includes laboratory. Prerequisite: introductory course in microeconomics. C-L: Economics 270L and Public Policy Studies 272L. 4 units. *Kramer*

**271. Economic Analysis of Resource and Environmental Policies.** Case and applications oriented course examining current environmental and resource policy issues. Benefits and costs of policies related to sustaining resource productivity and maintaining environmental quality will be analyzed using economic and econometric methods. Topics include benefit-cost analysis, intergenerational equity, externalities, public goods, and property rights. Prerequisite: Environment 270L or equivalent; Economics 149 recommended. C-L: Economics 272. 3 units. *Staff*

**272. Evaluation of Public Expenditures.** Basic development of cost benefit analysis from alternative points of view, for example, equity debt, and economy as a whole. Techniques include: construction of cash flows, alternative investment rules, inflation adjustments, optimal timing and duration of projects, private and social pricing. Adjustments for economic distortions, foreign exchange adjustments, risk and income distribution examined in the context of present value rules. Examples and cases from both developed and developing countries. C-L: Economics 261 and Public Policy Studies 261. 3 units. *Conrad*

**273. Marine Fisheries Policy.** Principles, structure, and process of public policy-making for marine fisheries. Topics include local, regional, national, and international approaches to the management of marine fisheries. A social systems approach is used to analyze the biological, ecological, social, and economic aspects of the policy and management process. (Given at Beaufort.) C-L: Marine Sciences. 3 units. *Orbach*

**274. Resource and Environmental Policy.** Development of a policy analysis framework for studying resource and environmental policy. Political institutions, interest group theory, public choice theory, role of economics in policy analysis, ethics and values. Application to current and historical U.S. policy issues. Prerequisite: Environment 270L, Public Policy Studies 272, or consent of instructor. C-L: Public Policy Studies 274. 3 units. *Staff*

**276. Marine Policy.** Formal study of policy and policy-making concerning the coastal marine environment. History of specific marine-related organizations, legislation, and issues and their effects on local, regional, national, and international arenas. Topics explored through use of theoretical and methodological perspectives, including political science, sociology, and economics. Consent of instructor required. (Given at Beaufort.) C-L: Marine Sciences and Public Policy Studies 197. 3 units. *Orbach*

**277. Conservation and Sustainable Development I: Concepts and Methods.** Agronomic, ecological, and economic concepts of sustainability, with emphasis on application in developing countries; forest, soil, and wildlife resources; models in conservation biology; historical, cultural, and sociological perspectives; policy analysis. 3 units. *Staff*

**278. Conservation and Sustainable Development II: Integrated Problem Solving.** Approaches to reconciling conservation and development, with emphasis on developing countries. Case studies; project formulation, implementation, and evaluation; institutional policy formation; conflict resolution. 3 units. *Staff*



**282S. Environmental Ethics.** Selected topics involving values and the environment, for example, extending morality to nature, rights of future generations, environmental aesthetics, diversity and stability, ideological biases in ecological knowledge. Consent of instructor required. C-L: Philosophy 289S. 3 units. *Cooper*

**283. Corporate Environmental Management and Strategy.** Examines management theories, frameworks, tools, and concepts which can be used to understand the interactions of corporations with the natural environment. Topics include industrial ecology, design for the environment, product stewardship, corporate environmental policies, stakeholder relationships, business/not-for-profit partnerships, green marketing, managing international operations, environmental communication, and sustainability. C-L: Business Administration 491. Variable credit. *Lober*

**285. Land Use Principles and Policy.** Consideration of four major roles of land in the United States: as a producer of commodities, financial asset, component of environmental systems, and location of development. Analysis of market allocation of land, market failure, role of public planning and regulation. C-L: Public Policy Studies 285. 3 units. *Healy*

**290. Physical Oceanography.** Introduction to the dynamic principles of ocean circulation with an emphasis on large temporal and spatial scales of motion. Topics include wind-driven and density-driven flow, western boundary intensification, mid-ocean, shelf, and tropical circulations. Corequisite: Geology 250. Prerequisites: Mathematics 31 and 32 or consent of instructor. C-L: Geology 203 and Mechanical Engineering 290. 3 units. *Lozier*

**291. Geological Oceanography.** The geology of ocean basins, including origin, bottom physiography, sediment distribution, and sedimentary processes. Not open to students who have taken Geology 206S. (Given at Beaufort.) C-L: Geology 205 and Marine Sciences. 3 units. *Staff*

**292L. Biological Oceanography.** Physical, chemical, and biological processes of the oceans, emphasizing special adaptations for life in the sea and factors controlling distribution and abundance of organisms. Not open to undergraduates. Four units (spring); six units (summer). (Given at Beaufort.) Prerequisite: introductory biology. C-L: Marine Sciences. Variable credit. *Ramus or staff*

**293. Analysis of Ocean Ecosystems.** The history, utility, and heuristic value of the ecosystem; ocean systems in the context of Odum's ecosystem concept; structure and function of the earth's major ecosystems. Not open to undergraduates. (Given at Beaufort.) Prerequisite: one year of biology, one year of chemistry, or consent of instructor. C-L: Marine Sciences. 3 units. *Barber*

**294L. Marine Communities.** Dynamics of marine communities in the context of current ecological theory. Life history strategies, competition, predation, diversity, and stability; detailed considerations of benthic and pelagic communities. Not open to undergraduates. (Given at Beaufort.) Prerequisites: introductory biology and mathematics. C-L: Marine Sciences. 4 units. *Staff*

**295L. Marine Invertebrate Zoology.** Structure, function, and development of invertebrates collected from estuarine and marine habitats. Not open to students who have taken Biology or Zoology 274L. Not open to undergraduates. Four units (fall); six units (summer). (Given at Beaufort.) Prerequisite: introductory biology. C-L: Marine Sciences. Variable credit. *Kirby-Smith*

**297L. Biology of Marine Invertebrates.** Systematic survey of the principal marine invertebrate taxa, with emphasis on structure, function, behavior, and ecology. Field trips and independent projects. Not open to undergraduates who have taken Biology

176L. (Given at Beaufort.) Prerequisite: introductory biology (Biology 25L). C-L: Marine Sciences and Zoology 274L. 6 units. *Dimock (visiting summer faculty)*

**298. Special Topics.** Content to be determined each semester. May be repeated. Variable credit. *Staff*

**299. Independent Studies and Projects.** Directed readings or research at the graduate level to meet the needs of individual students. Consent of instructor required. Units to be arranged. Variable credit. *Staff*

**302. Models in Forest and Environmental Management.** Students learn how to design and choose models for forestry and ecology. Emphasis on using models to develop strategy and evaluate options for culturing forests and related ecosystems. Subjects include timber, wildlife, water, recreation, and cash flow. 3 units. *Boyce*

**303. Principles of Ecological Modeling.** Design, implementation, analysis, and interpretation of ecological models. Combination of lectures, student-moderated discussions, and computer lab exercises. Prerequisites: Biology 110L or equivalent and Environment 251 or equivalent. C-L: Botany 303. 3 units. *Reynolds and Urban*

**305. Harvesting Effects on Productivity.** Impacts of harvesting on the residual stand, soil properties, water quality, and future site productivity. The integration of harvesting into overall stand management through a full rotation is stressed. Offered on demand. 2 units. *Davison*

**306. Models for Landscape Forestry: Meeting Consumer Demands.** Reduction of complexity of changing states of organization of forested landscapes to explicit managerial plans. Consequences of alternative plans are displayed in relationship to requirements for eco-labels and certification. Easily constructed models are designed for use with computers. Consent of instructor required. Intensive. 1 unit. *Austin and Boyce*

**307. Ecophysiology of Productivity and Stress.** Exploration of principles governing stand growth and its response to a variety of stresses. Emphasis on climate, soil resources, and competition. Stresses and their reliefs determined by pollution and the availability of resources as modifiers of the physiological properties of trees. 3 units. *Oren*

**312. Wetlands Ecology and Management.** The study of bogs, fens, marshes, and swamps. Emphasis on processes within the ecosystem: biogeochemical cycling, decomposition, hydrology, and primary productivity. Ecosystem structure, the response of these systems to perturbations, and management strategies are discussed. A research project is required. Prerequisites: Environment 211 or equivalent and consent of instructor. 3 units. *Richardson*

**313. Advanced Topics in Environmental Toxicology.** Discussion of current issues. Topics vary but may include chemical carcinogenesis in aquatic animals; biomarkers for exposure and sublethal stress in plants and animals; techniques for ecological hazard assessments; and means of determining population, community, and ecosystem level effects. Lectures and discussions led by instructor, guest speakers, and students. Prerequisite: Environment 212. 3 units. *Di Giulio*

**314. Integrated Case Studies in Toxicology.** Students are assigned topics relative to their chosen research discipline in toxicology and are asked to develop case studies to present at a roundtable workshop. Emphasis on review and analysis of toxicological problems from a holistic (multidisciplinary) viewpoint. Offered on demand. C-L: Pharmacology 314. 1 unit. *Abou-Donia*

**316. Case Studies in Environmental and Forest Management.** Structured methods for environmental and resource problem solving, including benefit-cost, statistical, and



decision analyses, as well as simulation and optimization, are applied to case studies. Previous course work provides a foundation for addressing ecological, economic, ethical, and sociopolitical aspects of management issues. Students work in teams to develop operational management plans which are presented in oral and written form. Prerequisite: Environment 211, 270, or 213 or equivalent, two quantitative courses, or consent of instructor. 4 units. *Maguire*

**317. Topics in Tropical Ecology and Conservation.** Discussion of current issues and ideas at the interface between basic and applied science. Lectures, seminars, and discussion with student participation. Prerequisite: Environment 217 or equivalent. 2 units. *Terborgh*

**322L. Microbiology of Forest Soils.** Ecology of the microbial populations of forest soils, with emphasis on rhizosphere interactions, root pathogenesis, and mycorrhizae. Includes laboratory. Offered on demand. Prerequisites: consent of instructor; mycology and bacteriology are recommended. 4 units. *Stambaugh*

**330L. Environmental Monitoring and Instrumentation.** Methods of measuring and monitoring the earth's physical environment with emphasis on water and air resources. Characteristics and uses of contemporary sensors, measurement and data acquisition systems. Methods of obtaining and processing computer compatible data records. Includes laboratory. Offered on demand. C-L: Botany 330L. 4 units. *Knoerr*

**333. Basic Groundwater Hydrology.** Basic principles, concepts, and methods of groundwater hydrology. Topics include water storage and transmission characteristics of rocks, physical features of U.S. groundwater regions, problems related to development and protection of the groundwater resource. Intensive. 1 unit. *R. Heath*

**335. Water Quality Modeling.** Development and evaluation of simulation models of surface water quality. Mechanistic descriptions of aquatic ecosystems and materials transport. Statistical methods for monitoring design and trend detection. Uncertainty analysis. Prerequisites: Environment 236 and 350. 2 units. *Reckhow*

**340. Biohazard Science.** Philosophy of safety; etiology, infectivity, and transmissibility of disease; immunity and resistance; occupational and nosocomial infections; aerobiology; biotechnology; disinfection and sterilization; biocontainment and facility design; and safety management. Prerequisite: general microbiology or consent of instructor. 3 units. *Tulis*

**341L. Methods in Biohazard Science.** Fundamentals of disinfection, sterilization, and biocidal materials methodology, inactivation kinetics and dosimetry; medical waste management; mutagenicity, pyrogenicity, and PCR testing; laminar flow cabinet certification; microbiologic surface and air sampling; respirator assessment; laboratory audits and regulatory compliance. Prerequisite: Environment 340 or consent of instructor. 4 units. *Staff*

**342. Bioaerosols.** Principles of aerobiology; sick-building syndrome and building-related illness; ventilation, filtration, and humidification systems; chemical and biological pollutants; health effects; sampling and assessment of bioaerosols; remediation measures; handling indoor air quality perceptions. Consent of instructor required. 2 units. *Thomann and Tulis*

**343. Hazard Management, Law, and Ethics.** Economics and ecology; survey of federal and state laws; legal basis for regulation; enforcement, including inspections and audits, permits and licensing, and citations, injunctions, and penalties; management accountability; ethics in science and medicine; risk assessment and management; policy development and implementation. Consent of instructor required. 3 units. *Warren*



**351. Computer-Based Map Analysis with Geographic Information Systems.** Introduction to computer-based map analysis systems (geographic information systems). Use of map algebra in computer analyses of spatially distributed map information. Applications in analyzing and solving natural resource management problems. 3 units. *Knoerr*

**352. Spatial Analysis in Ecology.** Techniques of spatial analysis as applied to ecological data, including scaling techniques, pattern analysis, indices of patchiness (adjacency, contagion), and inferential methods (cross-correlation, permutation procedures). Emphasis on hands-on applications in computer lab. Prerequisite: Environment 214 or consent of instructor. 3 units. *Urban*

**353. Advanced Topics in Landscape Ecology.** Small groups of students working together to complete a project in landscape analysis integrating remote sensing, geographic information systems, spatial analysis, and simulation modeling. Expectation is that each student will have experience in at least one of these areas. Consent of instructor required. Offered on demand. 3 units. *Halpin and Urban*

**355. Optimization Methods for Resource Management.** Introductory survey of optimization techniques useful in resource management and environmental decision making. Numerical techniques for unconstrained optimization, linear programming, dynamic programming, and optimal control methods. Consent of instructor required. 3 units. *Staff*

**356. Environmental Fluid Mechanics.** Introduction to turbulent fluid flow and Navier Stokes equations; basic concepts in statistical fluid mechanics; development of prognostic equations for turbulent fluxes, variances, and turbulent kinetic energy; Monin and Obukhov similarity theory for stratified turbulent boundary layer flows; applications to CO<sub>2</sub>, water vapor, and heat fluxes from uniform and nonuniform surfaces; the local structure of turbulence and Kolmogorov's theory; turbulent energy transfer and energy cascade between scales; turbulence measurements in the natural environment. Prerequisite: Civil Engineering 122L, Mathematics 111 or 135, or equivalent. 3 units. *Katul*

**363. Economics of Natural Resource Damage Assessment.** Topics vary each semester offered. C-L: Economics 363. 3 units. *Smith*

**372. Advanced Theory of Environmental and Natural Resource Economics.** The application of economic concepts to private- and public-sector decision making concerning natural and environmental resources. Topics include modeling externalities and public goods, design of policy instruments, management of renewable and nonrenewable resources, welfare theory and valuation methods, and environmental risk. Prerequisites: Economics 301 and 302 or consent of instructor. C-L: Economics 372. 3 units. *Mansfield and Smith*

**373. Topics in Environmental and Natural Resource Economics.** Examination of current research in environmental and natural resource economics, building on the theory of environmental and natural resource economics developed in Economics/Environment 372. Includes selected topics from Economics/Environment 372 and other quantitative and theoretical issues pertinent to prevailing research in environmental economics. Prerequisite: Economics/Environment 372 or consent of instructor. C-L: Economics 373. 3 units. *Mansfield and Smith*

**385. Environmental Decision Analysis.** Bayesian decision theory, including probability, subjective probability, utility theory, value of sample information, and multiattribute problems. Applications of decision theory in resource and environmental policy-making. Prerequisite: Environment 251 or equivalent. 3 units. *Maguire and Reckhow*

**388. Seminar in Resource and Environmental Policy.** Discussion of the political, legal, and socioeconomic aspects of public and private action in environmental quality control and management. Consent of instructor required. Variable credit. *Staff*

**389. Seminar in Conservation and Environmental History.** Traces the evolution of conservation and environmental movements and the development of environmental ethics. History of agencies, industries, associations, and citizen groups as well as overall policies for land and resources. Comparison of parallel developments in Canada. Consent of instructor required. C-L: History 389. 3 units. *Steen*

## COURSES CURRENTLY UNSCHEDULED

**210. Forest Pathology**

**210L. Forest Pathology**

**393. Professional Writing**

## Genetics

Professor Webster, *Director* (biochemistry); Professors Antonovics (botany), Bastia (microbiology), Boynton (botany), Cullen (genetics and microbiology), Endow (microbiology), Gillham (zoology), Greenleaf (biochemistry), Hsieh (biochemistry), Joklik (microbiology), Keene (microbiology), Kredich (medicine and biochemistry), Laurie (zoology), Modrich (biochemistry), Nevins (genetics and microbiology), Nicklas (zoology), Raetz (biochemistry), Rausher (zoology), Roses (neurobiology), Shaw (chemistry), Steege (biochemistry), Uyenoyama (zoology), and Webster (biochemistry); Associate Professors Been (biochemistry), Burdett (microbiology), Greene (biochemistry), Kiehart (cell biology), Kohorn (botany), Kreuzer (microbiology), Linney (microbiology), Schachat (cell biology), and Vilgalys (botany); Assistant Professors Davis (genetics and cell biology), Capel (cell biology), Dong (botany), Fehon (zoology), Garcia-Blanco (molecular cancer biology), Garrett (molecular cancer biology), Heitman (genetics and pharmacology), Hershfield (biochemistry), Honma (botany), Horowitz (molecular cancer biology), Kaufman (biochemistry), Lew (cell biology), Lin (cell biology), Marchuk (genetics and cell biology), Markert (immunology), Peterson (genetics), Pickup (microbiology), Seldin (microbiology), Sun (botany), Swenson (molecular cancer biology), Titus (cell biology), and Wharton (genetics and microbiology); Adjunct Professors Drake (National Institute of Environmental Health Sciences), Judd (National Institute of Environmental Health Sciences), Kunkel (National Institute of Environmental Health Sciences), and Resnick (National Institute of Environmental Health Sciences)

The graduate program in genetics provides study and research opportunities in a wide array of experimental systems. The integrated program is administered jointly by the Department of Genetics and the interdepartmental University Program in Genetics, with a faculty drawn from several of the biological sciences departments (biochemistry, botany, cell biology, chemistry, immunology, microbiology, molecular cancer biology, neurobiology, pharmacology, and zoology). Graduate students registered in any of the biological sciences departments may apply to the faculty of the genetics program to pursue study and research leading to an advanced degree. The program in genetics provides integrated graduate study in all facets of genetics. Faculty laboratories provide diverse research opportunities in such fields as biochemical and molecular genetics, evolutionary and population genetics, human genetics, immunogenetics, organelle genetics and human genetics.

Graduate training provides an unusual degree of flexibility to students for designing their Ph.D. program. During the first year, students are not committed to a particular department. In addition to taking courses, students rotate through three different



laboratories to gain diverse research experience and explore their interests. At the end of the first year, the student selects an advisor and chooses one of the following academic paths to obtain the Ph.D.: (1) The student may earn a Ph.D. in genetics either through the Program in Genetics or the Department of Genetics; (2) The student may obtain the Ph.D. in an affiliated department such as Biochemistry or Botany with a concentration in genetics. The degree is granted upon approval of the thesis by a committee of the faculty, which provides advice throughout the student's course of study and research.

## GENETICS COURSES (GEN)

**222. Genetic Analysis of Cellular Function.** Classical and molecular genetic approaches to understanding eukaryotic cell function using unicellular organisms such as yeasts and dictyostelium. Experimental approaches as well as illustrative studies of secretion, cell cycle, signal transduction, and cytoskeleton. Discussion of current literature and student presentations. Consent of instructors required. C-L: The University Program in Genetics 222. 3 units. *Heitman*

**232. Human Genetics.** Topics include segregation, genetic linkage, population genetics, multifactorial inheritance, biochemical genetics, cytogenetics, somatic cell genetics, neurogenetics, cancer genetics, clinical genetics, positional cloning, complex disease. Lectures plus weekly discussion of assigned papers from the research literature. Prerequisites: University Program in Genetics 278 or equivalent, and graduate status or consent of instructor. C-L: The University Program in Genetics 232. 3 units. *Marchuk, Pericak-Vance, and Speer*

## THE UNIVERSITY PROGRAM IN GENETICS COURSES (UPG)

**215. Genetic Mechanisms.** A comprehensive treatment of molecular and classical genetic mechanisms, emphasizing gene structure and function, genetic analyses in various experimental systems, as well as the behavior of chromosomes in replication, segregation, and recombination. Prerequisite: introductory genetics. 4 units. *Nevins and staff*

**222. Genetic Analysis of Cellular Function.** Consent of instructors required. See C-L: Genetics 222. 3 units. *Heitman*

**232. Human Genetics.** Prerequisites: University Program in Genetics 278 or equivalent, and graduate status or consent of instructor. See C-L: Genetics 232. 3 units. *Marchuk, Pericak-Vance, and Speer*

**247. Macromolecular Synthesis.** Consent of instructor required for undergraduates. See C-L: Cell and Molecular Biology 247. 2 units. *Garcia-Blanco and Keene*

**248. Cell Biology.** Consent of instructor required for undergraduates. See C-L: Cell and Molecular Biology 248. 2 units. *Bennett and Sheetz*

**263. Molecular Genetics of Drosophila Development.** Consent of instructor required. See C-L: Cell Biology 263; also C-L: Zoology 263. 2 units. *Fehon, Kiehart, and Wharton*

**268. Molecular Biology II: Nucleic Acids.** Prerequisites: introductory biochemistry and equivalents of Biochemistry 259 and Cell and Molecular Biology 247, 277, and 278. See C-L: Biochemistry 268; also C-L: Cell Biology 268, Immunology 268, and Microbiology 268. 4 units. *Steege and staff*

**277. Structure of Macromolecules.** Consent of instructor required for undergraduates. See C-L: Cell and Molecular Biology 277. 2 units. *Beese and White*

**278. Genetic Analysis.** Fundamentals of classical genetics, including Mendelian inheritance, dominance, complementation, epistasis, recombination; overviews of im-



portant genetic organisms. Consent of instructor required for undergraduates. Second half of fall semester. C-L: Cell and Molecular Biology 278. 2 units. *Garrett and Steege*

**281. DNA, Chromosomes, and Evolution.** Prerequisite: an introductory course in genetics or cell or molecular biology, or consent of instructor. See C-L: Zoology 281. 3 units. *Laurie and Nicklas*

**283. Molecular Genetics of Organelles.** Prerequisite: introductory genetics. See C-L: Zoology 283; also C-L: Botany 283. 3 units. *Boynton (botany) and Gillham (zoology)*

**286. Evolutionary Mechanisms.** Prerequisites: Biology 25L and 120 or equivalents. See C-L: Botany 286; also C-L: Zoology 286. 3 units. *Antonovics, Rausher, and Uyenoyama*

**287. Evolutionary Genetics.** An introduction to the principles of evolutionary genetics, with discussion of the current literature. Levels of selection; neutral theory; variation in populations; speciation. Reconstructing evolutionary history; genomic evolution. 2 units. *Antonovics*

**288. Mathematical Population Genetics.** Prerequisites: calculus; statistics and linear algebra recommended. See C-L: Zoology 288. 3 units. *Uyenoyama*

**316. Genetics Student Research.** Presentations by genetics program students on their current research. Required course for all graduate students specializing in genetics. Credit grading only. 1 unit. *Endow*

**350. Genetics Colloquium.** Lectures, discussion sections, and seminars on selected topics of current interest in genetics. Required of all students specializing in genetics. Prerequisites: a course in genetics and consent of instructor. 1 unit. *Gillham and staff*

## Geology

Professor Corliss, *Chair* (338 Old Chemistry); Associate Professor Rojstaczer, *Director of Graduate Studies* (106 Old Chemistry); Professors Baker, Barber, Haff, Heron, Karson, Kay, Livingstone, Perkins, Pilkey, and Schlesinger; Associate Professors Boudreau, Clark, Klein, and Malin; Assistant Professors Howd and Lozier

The Department of Geology offers graduate work leading to the M.S. and Ph.D. degrees. Students entering the graduate program in geology normally have an undergraduate degree in the natural sciences. For the M.S. degree a student must have had or must take the courses required for a B.S. degree at most universities including one year of college chemistry, one year of college physics, and mathematics through calculus. Requirements for the Ph.D. are decided on an individual basis. Graduate courses and research in the Department of Geology provide specialized training in a wide range of fields in the earth sciences including coastal geology, earth surface processes and geomorphology, facies analysis, geological oceanography and limnology, geophysics, high-temperature geochemistry, hydrogeology, igneous petrology, low-temperature geochemistry, micropaleontology, paleoceanography, sedimentary petrology, seismology, and structural geology and tectonics.

The department houses the Program for Developed Shorelines. Several faculty are members of the Center for Hydrologic Science, and Ph.D. students in geology are eligible, subject to course and thesis requirements, to receive a certificate in hydrology. Further information on the Program for Developed Shorelines and the Center for Hydrologic Science can be found elsewhere in this bulletin.

Further information on the graduate program in geology, the departmental facilities, the staff, and financial aid may be obtained from the Director of Graduate Studies, Department of Geology.

## For Seniors and Graduates

**200. Beach and Coastal Processes.** The study of sedimentary processes and geomorphology of nearshore environments with emphasis on both developed and undeveloped barrier island systems. 3 units. *Pilkey*

**201L. Physical Processes in Coastal Environments.** The physical processes on beaches, the inner continental shelf, and in estuaries, in the context of their implications for the biological and geological environments. Topics to be drawn from the origin of waves and currents, tides, turbulence and mixing transport of sand and larvae. Applications to biomechanics and coastal erosion, and to marine ecology, coastal zone management, and water quality. (Given at Beaufort.) Prerequisites: Mathematics 31 and 32. C-L: Environment 222L and Marine Sciences. 4 units. *Howd*

**202. Beach and Island Geological Processes.** Processes affecting evolution of beaches and barrier islands with emphasis on the effect of constructions. Not open to students who have taken Geology 196. (Given at Beaufort on three weekends.) C-L: Marine Sciences. 2 units. *Pilkey*

**203. Physical Oceanography.** Introduction to the dynamic principles of ocean circulation with an emphasis on large temporal and spatial scales of motion. Topics include wind-driven and density-driven flow, western boundary intensification, mid-ocean, shelf, and tropical circulations. Prerequisites: Mathematics 31 and 32 or consent of instructor. C-L: Environment 290 and Mechanical Engineering 290. 3 units. *Lozier*

**204. Advanced Topics in Nearshore Processes.** Advanced treatment of fluid processes in the nearshore. Topics drawn from nonlinear wave theory, radiation stresses and their gradients, forced and free infragravity waves, and the origins of mean currents in the surf zone. Other topics following students' interests. (Given at Beaufort.) Prerequisite: Environment 290, Mathematics 111 or 114, or consent of instructor. C-L: Environment 268 and Marine Sciences. 3 units. *Howd*

**205. Geological Oceanography.** The geology of ocean basins, including origin, bottom physiography, sediment distribution, and sedimentary processes. Not open to students who have taken Geology 206S. (Given at Beaufort.) C-L: Environment 291 and Marine Sciences. 3 units. *Staff*

**206S. Principles of Geological Oceanography.** Geological aspects of the ocean basins including coastal to deep water sediment types and sedimentation processes, sea floor physiography and environmental problems. 3 units. *Pilkey*

**208S. Paleoceanography.** Geology, paleoceanography, and evolution of the oceans, ocean basins, and marine biota based on analysis of deep-sea sedimentary sequences. 3 units. *Corliss*

**209S. Climate Dynamics and the Paleoclimatic Record.** Introductory readings and reviews of modern physical climatology will be followed by extensive readings covering the record of past climatic change, concentrating on latest Quaternary and Holocene time. Topics include the global energy balance, the hydrologic cycle, general circulation of the atmosphere and oceans, climate modeling, future climate change, and the known record of paleoclimate (from marine and lake sediments, corals, soils, ice cores, etc.). Some background in physical sciences recommended. 3 units. *Baker*

**215. Clastics Facies Analysis: Recent and Ancient.** Modern clastic depositional systems and their ancient analogs. Prerequisite: Geology 110L. 3 units. *Heron*

**216. Field Analysis of South Florida Carbonates.** Analysis of recent sediments and organisms and their Pleistocene analogs. One-week field trip. Pass/fail grading only. Prerequisite: Geology 110L or consent of instructor. 1 unit. *Perkins*

**218. Geological Fluid Mechanics.** Physical properties of fluids. Continuity, momentum, and energy principles. Laminar and turbulent flow; potential flow; open channel flow. Applications to stream and watershed hydraulics, sediment transport, and other geological phenomena. Prerequisites: Engineering 75L, Mathematics 31 and 32, or Physics 41L and 42L. 3 units. *Haff*

**219. Sediment Transport.** The processes by which wind and water move sedimentary material. Prerequisites: Civil Engineering 122L or Geology 41 and 218. 3 units. *Haff*

**220. Earth Surface Processes and Geomorphology.** The origin, nature, and significance of natural features on the earth's surface. Content varies from year to year. Prerequisites: open to graduates and advanced undergraduates with consent of instructor. 3 units. *Haff*

**221. Hydrogeology.** Theory of groundwater flow and solute transport with application to geologic processes. Prerequisite: Chemistry 12L, Mathematics 103, Physics 42L or 52L, or consent of instructor. 3 units. *Rojstaczer*

**222L. Statistics and Data Analysis in Earth and Ocean Science.** Techniques commonly used by earth and ocean scientists for the analysis of spatial and/or temporal series of data. Topics include regression, Fourier analysis, nonparametric spectral analysis, and, perhaps, principal components analysis and parametric spectral estimators. (Given at Beaufort.) Prerequisites: Mathematics 31 and 32, Statistics 110 or 112, or consent of instructor. C-L: Environment 252L and Marine Sciences. 4 units. *Howd*

**223. Numerical Methods in Hydrogeology.** Forward and inverse modeling of groundwater flow and transport. Prerequisite: Computer Science 8 or 53, Geology 221, Mathematics 103, or consent of instructor. 3 units. *Rojstaczer*

**225S. Advanced Topics in Hydrogeology.** Hydrologic controls on the chemical and physical state of the earth's crust. Prerequisite: Geology 221 or consent of instructor. 3 units. *Rojstaczer*

**226. Advanced Environmental Geology.** A quantitative case history approach to the role of geological materials and processes in environmental assessment studies. The impact of rock type, faulting, folding, weathering, erosion, flooding, and underground fluid flow on the human environment. Field trips to environmentally sensitive sites and original research project required. Intended for students of the environment and engineering. 3 units. *Malin*

**233S. Oceanic Crust and Ophiolites.** Structure, tectonics, petrology, and geochemistry of oceanic spreading environments and ophiolite complexes. Prerequisites: Geology 106L and 130 or consent of instructor. 3 units. *Karson*

**237S. Structure and Evolution of the Appalachian Orogen.** Overview of sedimentation, deformation, and metamorphism responsible for the development of the Appalachian Mountain Belt from Newfoundland to Alabama in the context of plate tectonics. Prerequisites: Geology 106L, 110L, and 130 or consent of instructor. 3 units. *Karson*

**249. Marine Micropaleontology.** Introduction to marine microfossils, basic principles of micropaleontology and stable isotope geochemistry with applications to paleoceanography. Lectures and laboratory. 3 units. *Corliss*

**252. Advanced Earth Physics.** A quantitative survey of the earth's seismology, gravity, magnetism, heat flow, and internal dynamics. Derivation of the basic equations of geophysics. The locations and mechanics of earthquakes; the earth's internal layers, the gravitational attraction of mountains, the magnetic properties of rocks, the cooling of the earth, and the basics of continental drift. Original research project required.



Prerequisite: upper-division or first-year graduate standing in science or engineering. 3 units. *Malin*

**253. Seismology I.** The generation, propagation, and observation of seismic waves in the earth. Basic continuum mechanics; the equations of seismology and their solutions; elementary source theory, seismic waves in the earth's structure and materials; seismic exploration of the lithosphere; seismic instrumentation. Offered on demand. 3 units. *Malin*

**254. Seismology II.** Continuation of Geology 253. Offered on demand. 3 units. *Malin*

**265S. Advanced Topics in Geochemistry.** Advanced readings in petrology and geochemistry. Consent of instructor required. 3 units. *Klein*

**269. Theoretical Geochemistry.** Introductory thermodynamics applied to geologic problems through understanding of phase equilibrium. Prerequisites: Geology 105L (may be concurrent) and Mathematics 32. 3 units. *Boudreau*

**272. Biogeochemistry.** Processes controlling the circulation of carbon and biochemical elements in natural ecosystems and at the global level, with emphasis on soil and surficial processes. Prerequisite: Chemistry 12L or equivalent. 3 units. *Schlesinger*

**273S. Analytic Techniques.** An introduction to advanced analytic procedures used in the earth sciences: such as electron microbeam techniques (scanning electron microscopy, electron microprobe analysis) and plasma emission/absorption spectroscopy. Consent of instructor required. 3 units. *Boudreau and Klein*

**285S. Layered Intrusions.** Survey of layered igneous intrusions and current theories on crystallization and other processes in mafic magmas. Offered alternate years. Prerequisites: Geology 105L and 106L or consent of instructor. 3 units. *Boudreau*

**291. Independent Study.** Consent of instructor required. 3 units. *Staff*

**293S. Frontiers of Geology I.** Survey of the history, status, and trajectory of "hard-rock" petrology, structural geology, tectonics, and geophysics. 3 units. *Karson and staff*

**294S. Frontiers of Geology II.** Survey of the history, status, and trajectory of "soft-rock" petrology, stratigraphy, sedimentation, geochemistry, hydrology, and paleontology. 3 units. *Karson and staff*

**295S. Advanced Topics in Geology.** Topics, instructors, and credits to be arranged each semester. Variable credit. *Staff*

#### For Graduates

**371, 372. Advanced Topics in Geology.** To meet the individual needs of graduate students for independent study in various environmental sedimentary fields. Variable credit. *Staff*

#### COURSES CURRENTLY UNSCHEDULED

**214S. Sedimentary Petrography**

**217. Field Analysis of Ancient Sedimentary Sequences**

**230S. Advanced Topics in Structural Geology and Tectonics**

**236S. Lithosphere Plate Boundaries**

**239S. Advanced Topics in Structural Geology and Tectonics**

**250. Applied Mathematics for the Environmental and Earth Sciences**

**258S. Advanced Topics in Geophysics: Interdisciplinary Approaches to Problems in Tectonics, Seismology, and the Environment**

**260S. Applied Subsurface Stratigraphy**

**270. Sedimentary Geochemistry**

**271. Isotope Geochemistry**

**275. Economic Geology**

**283S. Experimental Methods in Geology**

**292. Computer Methods in Geology**

## **German Studies Program**

Professor Rolleston, *Chair* (116L Old Chemistry); Assistant Professor Hell, *Director of Graduate Studies* (116D Old Chemistry); Professors Alt (German), Antonovics (botany), Bernstein (law), Borchardt (German), Brandon (philosophy), Counce (cell biology), Gillespie (political science), Hillerbrand (religion), Jameson (literature), Kitschelt (political science), Klopfer (zoology), Koonz (history), Lahusen (Slavic), Silbiger (music), Steinmetz (divinity), Surin (literature), and Todd (music); Associate Professors Berger (divinity), Gilliam (music), Morton (German), Rasmussen (German), Robisheaux (history), Stiles (art), and Van Miegroet (art); Assistant Professors Coles (political science), Fischer (literature), Hachohen (history), Pfau (English), Risholm (German), and Walther (German); Adjunct Associate Professor Ward (philosophy)

The Interdisciplinary Program in German Studies offers graduate work leading to the Ph.D. degree. A student's program will be structured among four general disciplinary areas: history and society, literature and linguistics, fine arts and music, philosophy and religion. All students will do some course work in each of the areas, with additional basic requirements in literature and linguistics. A student will elect one of the four areas for comprehensive study; the dissertation topic will normally emerge from that specializing process, and will be grounded in the appropriate disciplinary methodology. Prior to admission to Ph.D. candidacy, students must demonstrate a reading knowledge of at least one language other than English or German. Determination of which language or languages fulfill this requirement will depend on the student's chosen area of concentration and specific research plans.

A qualifying examination, to be taken in three parts, must be passed before a student may proceed to candidacy and the writing of the dissertation. Part I, to be taken at the end of the second full year of study, is a general examination devoted to major issues and topics in German history and culture. (Students concluding their studies at this point are asked to submit and defend an A.M. essay for the master's degree.) Part II, the Ph.D. preliminary examination, is devoted to a single historical period, problem, or genre in the student's chosen area of concentration and is based on a reading list approved by the student's faculty committee. (Successful completion of this stage of the qualifying examination constitutes admission of the student to Ph.D. candidacy.) For Part III, to be devoted to the dissertation proposal, the student evolves and masters the bibliography for the anticipated dissertation, articulates the methodological and research problems involved, and presents a substantial sample of the project.

Students in other departments needing a course in German for reading knowledge should see the undergraduate bulletin.

### **Courses in the Department of Germanic Languages and Literature**

**200S. Proseminar: Introduction to Literary Criticism.** Literary theory within the framework of Germanistik, combining a survey of the major critical approaches which developed after 1945 with the discussion of several paradigmatic readings of literary

texts. Approaches studied include New Criticism, hermeneutics, Marxist critical theory, reception aesthetics, structuralism, poststructuralism, and feminist literary criticism(s). 3 units. *Hell*

**201. Introduction to Medieval German: The Language of the German Middle Ages and Its Literature.** Fundamentals of medieval German language acquired through readings in the original Middle High German of Arthurian romance, heroic epic, and courtly poetry. C-L: Medieval and Renaissance Studies. 3 units. *Rasmussen*

**202S. Medieval Seminar.** Topics may include: heroic epic, courtly epic, medieval poetics, German lyric poetry from the twelfth to the fifteenth century. Solid reading knowledge of modern German and some knowledge of medieval German required. C-L: Medieval and Renaissance Studies. 3 units. *Rasmussen*

**203S. Sex, Gender, and Love in Medieval German Literature.** Historical contexts for emergence of courtly love and the role of desire and interpretation in Gottfried von Strassburg's *Tristan und Isolde*, courtly love lyric, "maere." C-L: Medieval and Renaissance Studies. 3 units. *Rasmussen*

**204S. Advanced Business German.** Topics include contract negotiations, management goals and strategies, banking and financial instruments, environmental issues. Prerequisite: German 100S or consent of instructor. 3 units. *Dowell*

**210S. Renaissance and Reformation.** The development of "personality" from "type" to "individual" in German culture in the great transition from medieval to early modern times, with examples from literature, history, art, architecture, music, science, and religion. Emphasis on the Italian connection, northern mysticism, Prague in the fourteenth century, fifteenth-century poetry and prose, and Luther. C-L: Medieval and Renaissance Studies. 3 units. *Borchardt*

**215S. German Baroque Literature.** German literature of the grand gesture, of performance, of public posture; poetry of rhetoric; prose of the scoundrel, adventurer, and ne'er-do-well. C-L: Medieval and Renaissance Studies. 3 units. *Borchardt*

**225S. Introduction to Goethe.** Major works of lyric, narrative, drama, and theory, throughout Goethe's career. 3 units. *Morton*

**226S. Goethe's Faust.** Goethe's masterpiece and life's work, conceived as a summation of Western literature and mythology for the modern age. 3 units. *Morton*

**227S. Goethe Seminar.** Selected texts or other aspects of Goethe's life and work not treated in German 225S or 226S. Topics may include autobiography, scientific writings, longer novels, late lyrics, literary theory and criticism, as well as others. 3 units. *Morton*

**229S. Schiller: Aesthetic Theory and Practice.** The nature and function of the artist and the work of art, in Schiller's essays, poetry, and dramas. 3 units. *Borchardt, Morton, or Rolleston*

**230S. German Romanticism.** The emergence in the 1790s of a new cultural language: categories of self, history, interpretation, irony, and revolution. Theory, fiction, and poetry by Novalis, the brothers Schlegel, Tieck, Brentano, Eichendorff, Hoffmann, and Heine. 3 units. *Rolleston*

**232S. The Lyric: Goethe to the Present.** Poetry and its cultural meanings from versions of the modern *Ich* generated by Goethe, Hölderlin, and the romantics to the ironic new subjectivity of the 1970s. Emphasis on Mörike, Heine, Droste-Hülshoff, Rilke, Benn, Celan, Enzensberger, and Karin Kiwus. 3 units. *Rolleston*



**233S. German Theater as Anti-Drama.** The story of modern and postmodern drama with emphasis on Lenz, Büchner, Grabbe, Schnitzler, Brecht, Frisch, Dürrenmatt, Handke, expressionist drama, and Piscator's political theater. 3 units. *Alt*

**236S. Empires of the Mind: Nineteenth-Century German Ideas.** Selected topics in politics, religion, society, and history in the nineteenth century: Heine, Hegel, Schopenhauer, Feuerbach, Marx, Nietzsche, Burckhardt, Treitschke, Ranke, D. F. Strauss, Tönnies, Weber, Freud. 3 units. *Alt*

**245S. The Twentieth Century.** The major movements and writers from the expressionists, Thomas Mann, Kafka, Rilke, and Brecht, to Böll, Grass, Handke, and Christa Wolf. Emphasis on relations between text and history: World War I, Weimar, Third Reich, and the struggle to integrate past and present in post-Holocaust literature. 3 units. *Rolleston*

**246. German Letters in the Third Reich and in Exile.** German literature, drama, and film inside and outside Nazi Germany. Theoretical readings in Bloch, Benjamin, and others. 3 units. *Hell*

**247S. Postwar German Literature.** The development of German literature after 1945. Topics vary: German literature between 1945 and the founding of the two states; the GDR novel and the question of realism; GDR drama after Brecht; West German literature. 3 units. *Hell*

**248S. German Film from Weimar to Fascism.** German film from its inception through the Nazi period. Emphasis on the social, political, and cultural background of the period as well as specifics of film form and analysis. Focus on areas such as expressionist cinema, the realist film, Nazi propaganda and entertainment films. Taught in English. 3 units. *Risholm*

**249S. New German Cinema.** Postwar German film beginning with the popular "homeland" film and moving on to New German Cinema, emphasizing the social, political, and cultural background of the period. Diverse topics such as feminist filmmaking, auteur artists, contemporary cinema, and the Nazi past. The writings of filmmakers as well as theoretical issues in film criticism. Taught in English. 3 units. *Risholm*

**250S. German Literature and Classical Antiquity.** The reception of Greece and Rome in German letters; the triumph and decline of classical rhetoric; the idea of the "classical"; antiquity as model and reproach. 3 units. *Borchardt*

**253S. The Image of America in German Literature.** Selected readings in the myth of America (Jantz's "America in German Poetry and Thought"), including various genres from the eighteenth to the twentieth centuries, specifically texts by Goethe, Heine, Sealsfield, Kürnberger, Willkomm, Gerstäcker, Lenau, Solger, Kafka, Brecht, and Frisch. 3 units. *Alt*

**254S. Literature by Women.** Topics may include: the beginnings of women's writing; gender, history, and literary representation in the work of twentieth-century women writers; women writers from World War II to the present. Bachmann, Fleisser, Keun, Kolmar, Langgässer, Lasker-Schüler, Leutenegger, Rinser, Sachs, Seghers, and Wolf. Not open to students who have taken German 137S. C-L: Women's Studies. 3 units. *Rasmussen*

**260. History of the German Language.** Phonology, morphology, and syntax of German from the beginnings to the present. C-L: Medieval and Renaissance Studies. 3 units. *Rasmussen*

**261. Second-Language Acquisition Theory and Practice.** Modern teaching techniques; problems in the teaching of German on the secondary and college levels.

Analysis and evaluation of textbooks, related audiovisual materials, and computer programs. 3 units. *Walther*

**262. Applied Linguistics.** The application of modern linguistic principles to a systematic study of the phonetics, morphology, and syntax of modern German. 3 units. *Staff*

**265, 266. Elementary German for Business and Law.** An accelerated course providing the fundamentals of German grammar, syntax, and culture, with special attention to the terminology of business and law. Exposure to audio- and computer-assisted instructional materials. Open only to graduate and professional school students. 3 units each. *Bernstein*

**270. Consciousness and Modern Society.** The blend of philosophy, literature, and sociology in German thinking about actual and possible societies. The idea of consciousness as producing involvement, detachment, or transformation. Marx, Nietzsche, Lukacs, Freud, Marcuse, Benjamin, Adorno, and Habermas. Taught in English. 3 units. *Rolleston*

**271S. Contemporary Theory and the German Tradition.** The reorientation of Western thought toward theories of knowledge and of language, from the eighteenth century to the present, and the significance of that paradigm shift for contemporary theory of literature and literary criticism. Readings in Kant, Herder, Mauthner, Wittgenstein, Heidegger, Habermas, and Apel. Taught in English. 3 units. *Morton*

**299S. Seminar in German Studies.** Review of current debates and historical perspectives in the German cultural field, structured through contributing disciplines: social and economic history, political theory and history, literature, fine arts, music, philosophy, and religion. Team-taught, involving a wide range of faculty in the German Studies Program. Taught in English. 3 units. *Morton or Rolleston and staff*

**300S. The Discipline of Germanistik: A Historical Survey.** A study of trends in scholarly criticism within the context of German culture and politics beginning in the 1810s with the origins of *Germanistik* as a university discipline. Topics may include: the invention of philology and the romantic enterprise; positivism and *Geistesgeschichte*; the politics of *Germanistik*, 1933-45; *Germanistik* in Europe and the United States after 1945. 3 units. *Alt, Borchardt, or Rasmussen*

**301. German Studies: Theory and Practice.** German studies at the intersection of various discourses (such as feminism, psychoanalysis, new historicism), questioning traditional concepts such as national identity, history, and language. Interdisciplinary issues may include: the relationship of literature, the unconscious and technology; the cinematic representation of Nazi history; architecture, monuments, and "German" space. Texts might include works by Kafka, Freud, Marx, Spengler, and Schinkel as well as texts by individuals whose work has been excluded from more traditional "Germanistik" courses. 3 units. *Risholm*

**321, 322. Germanic Seminar.** 3 units each. *Staff*

## COURSES CURRENTLY UNSCHEDULED

**220S. Reason and Imagination: The German Eighteenth Century**

**231S. Romantic Outsiders**

**235S. Nineteenth-Century German Literature**

**240S. Naturalism and Beyond: The Turn of the Century**

**241S. Nietzsche**

**242S. Expressionism**

- 244A, S. International Expressionism
- 244B, S. International Modernism
- 251S. Germanic Mythology and Its Critics
- 252S. The Mystical Tradition
- 255S. Paradigmatic Issues in Literary Theory
- 272S. The German Literature of Fantasy
- 273S. Franz Kafka and Thomas Mann
- 274S. The Image of America in German Literature
- 275S. German Women Writers

## GERMAN STUDIES COURSES IN OTHER DEPARTMENTS

### Art and Art History

- 243S. Topics in Netherlandish and German Art
- 283S. Topics in Modern Art
- 297S. Topics in Art since 1945
- 299S. Critical Theory

### History

- 204. German Society, 1914-1945
- 253S, 254S. European Diplomatic History, 1871-1945
- 258S. Social Conflict in Weimar and Nazi Germany

### Literature

- 251. History of Criticism
- 252. Criticism and Literary Theory in the Twentieth Century
- 281. Paradigms of Modern Thought
- 283. Modernism
- 285. Literature and Ideology
- 293. Seminars in Literature and History
- 298. Topics in Philosophy and Literature

### Music

- 222. Music in the Middle Ages
- 223. Music in the Renaissance
- 224. Music in the Baroque Era
- 225. Music in the Classic Era
- 226. Music in the Nineteenth Century
- 227. Music in the Twentieth Century
- 236. Nineteenth-Century Piano Music

### Philosophy

- 231S. Kant's *Critique of Pure Reason*
- 232S. Recent Continental Philosophy
- 233S. Methodology of the Empirical Sciences
- 234S. Problems in the Philosophy of Biology
- 235S. Nineteenth-Century German Philosophy

### Political Science

- 216S. Evolution of European Marxism
- 225S. Topics in Comparative Government and Politics: Western Europe
- 228S. Nineteenth- and Twentieth-Century Political Philosophy
- 231S. Crisis, Choice, and Change in Advanced Democratic States
- 236S. Hegel's Political Philosophy
- 239. Comparative History and International Studies
- 247. Politics and Philosophy of Self and Other

### Religion

- 228. Twentieth-Century Continental Theology
- 231S. Seminar in Religion and Contemporary Thought
- 232S. Religion and Literary Studies
- 236. Luther and the Reformation in Germany
- 248. The Theology of Karl Barth



- 297. Philosophical and Theological Discourses on Modernity
- 320. Theology, Power, and Justice
- 322. Nineteenth-Century European Theology
- 338. Calvin and the Reformed Tradition
- 339. The Radical Reformation

#### **Slavic Languages and Literatures**

- 210. Literature and Criticism of Socialist Realism
- 250. Trends in Russian and East European Literary Criticism and Beyond

#### **Sociology**

- 206. Sociological Theory

#### **Divinity School Courses**

- 201. Christian Thought in the Middle Ages
- 241. Problems in Reformation Theology
- 262. Marxist Ideology and Christian Faith
- 272. Theology of Paul Tillich
- 303. Philosophical Method in Religious Studies
- 328. Twentieth-Century European Theology

## **Center for Health Policy Research and Education**

Terry Boychuk, Ph.D., *Director*

Duke University, through the Center for Health Policy Research and Education, offers an interdisciplinary certificate in health policy. The program speaks to the needs of students preparing for careers in health care policy, management, and the associated professions as the American health care industry enters into a period of rapid and profound change.

Courses in the health policy certificate program address three interrelated goals: (1) to investigate the machinery of contemporary health policy-making and to understand the broad political dynamics which have conditioned American health policy, past and present; (2) to familiarize students with the institutional and economic complexity of the American health care system through the study of the interaction between the key players in health care financing and organization—employers, private insurance carriers, government regulators, health care providers and consumers; and, (3) to explore the cultural and ideological underpinnings of modern conceptions of health and the recurrent ethical dilemmas facing health care providers, patients, and policymakers.

The Health Policy Certificate Program draws upon established research programs relating to health services centered in economics, political science, public policy, and sociology but recognizes too the inspired contributions to health care debates originating in the disciplines of anthropology, history, law, medical arts, philosophy, psychology, and religion.

*Program requirements.* The health policy certificate is open to all graduate students. Successful candidates must complete the prescribed combination of five courses: two courses drawn from the core set of health policy course offerings; any two additional elective courses (200-plus level); and the capstone course, Public Policy Studies 255, Health Policy Analysis. Candidates for the Masters of Public Policy degree seeking the health policy certificate need only complete one elective course if they write their master's memo on some aspect of health policy.

Address inquiries to the Director, Center for Health Policy Research and Education, 125 Old Chemistry Building, Durham, North Carolina 27706.

## **History**

Professor Roland, *Chair* (215 Carr); Professor Gavins, *Director of Graduate Studies* (212A Carr); Professors Cell, Chafe, Dirlik, Gaspar, Goodwyn, Herrup, Hewitt, Keyssar, Koonz, Kuniholm, Lerner, Mauskopf, Mendelsohn, Miller, Oates, Petroski, Reddy, Richards, Shatzmiller, TePaske, Thompson, Witt, and Wood; Associate Professors Boatwright,

English, Ewald, Green, James, Nathans, Neuschel, Rigsby, Robisheaux, and Wigen; Assistant Professors Biddle, Hacothen, Humphreys, Mazumdar, Peyroux, and Thorne; Professors Emeriti Cahow, Colton, Davis, Durden, Ferguson, Franklin, Holley, Parker, Preston, Ropp, A. Scott, W. Scott, Watson, and Young

The Department of History offers graduate work leading to the A.M. and Ph.D. degrees. Candidates for the A.M. degree must have a reading knowledge of at least one ancient or modern foreign language related to their programs of study and have completed successfully a substantial research paper, or two seminar papers, normally the product of a year's seminar or two semester courses. The paper(s) must be examined and approved (at a required A.M. meeting) by three readers: the supervising professor and two other professors from the graduate staff.

Candidates for the degree of Doctor of Philosophy prepare themselves for examinations in four fields, at least three of which shall be in history. The choice of fields is determined in consultation with the student's supervisor and the director of graduate studies. The department offers graduate instruction in the broad historical areas of North America; Latin America; Great Britain and the Commonwealth; ancient, medieval, and Renaissance Europe; modern Europe; Russia; Japan; China; South Asia; military; history of science, technology, and medicine; and in the comparative and thematic fields of women's history, environmental history, diplomatic history, labor history, and slave societies.

The candidate for the Ph.D. degree must demonstrate a reading knowledge of one foreign language, ancient or modern, prior to the preliminary examination. All students are expected to take History 301-302 in their first year, unless entering with an A.M. in history. In addition, each student must fulfill a general methodology requirement, by completing at least one course which would appreciably increase the candidate's methodological proficiency. With the approval of the director of graduate studies, options include taking a graduate class in methodology, such as demography, statistics, oral history, archaeology, cartography, or a summer training program for developing specific methodological skills. Students who need to master a second foreign language may substitute that language for the methodology requirements.

**Ancient History.** For courses in ancient history which may be taken for credit in either history or classical studies, see Classical Studies.

### **For Seniors and Graduates**

Students may receive credit for either semester of a hyphenated course at the 200 level without taking the other semester if they obtain written consent from the instructor.

**201S. The Russian Intelligentsia and the Origins of the Revolution.** Origin and dynamics of the Russian revolutionary movement, the intelligentsia, and the emergence of the labor movement. 3 units. *M. Miller*

**202S. The Russian Revolution.** An analysis of the Bolshevik seizure of power in 1917 and the establishment of a revolutionary society and state during the 1920s. 3 units. *M. Miller*

**203. Topics in Modern World Environmental History.** Human effects upon the natural environment; case studies and a synthetic global perspective. 3 units. *Richards*

**209S. Race, Class, and Gender in Modern British History.** The intersection between gender, race, and class identities in British history since the eighteenth century. The parallels and overlaps as well as the disjunctures and distinctions between these different modes of power in a period of tremendous economic, social, and political change resulting from industrialization and imperial expansion. Questions and issues include the impact of industrialization on gender as well as class consciousness, the role of women, the middle classes and the working classes in the campaign against slavery,

British workers' reactions to the "scramble" for colonies, the attitudes and activities of British women in the empire, and sexuality and the evolution of racialist discourse. 3 units. *Thorne*

**210S. Anthropology and History.** Prerequisite: major in history, one of the social sciences, or comparative area studies; or graduate standing. See C-L: Cultural Anthropology 207S. 3 units. *Reddy*

**211A. History of Medicine in the Southern United States.** The social history of disease and medical practice in the southern United States from the colonial era to World War II. Topics will include the impact of disease on the region's settlement and economy, slave health, the role of "alternate practitioners," and the growing federal presence in the post-Reconstruction South. 3 units. *Humphreys*

**214. Class, Public Opinion, and the French Revolution.** The current state of the ongoing controversies over the origins and character of the first modern social revolution. 3 units. *Reddy*

**216S. United States Diplomacy, 1890-1945.** 3 units. *Staff*

**219S, 220S. History of Science and Technology.** The interaction of science and technology in the Western world from earliest times to the present. 3 units each. *Mauskopf and Roland*

**221. Special Topics in the History of Europe, 1200-1700.** Investigation of selected aspects of the economic, social, and cultural history of premodern Europe. Topics have included the social history of religion, gender and society, and traditional society and the origins of capitalism. C-L: Medieval and Renaissance Studies. 3 units. *Neuschel or Robisheaux*

**222A. Problems in the Intellectual History of the European Renaissance and Reformation.** Prerequisites: History 151A and reading knowledge of German, French, or Italian. C-L: Medieval and Renaissance Studies. 3 units. *Witt*

**222B. Florence: Renaissance City.** C-L: Medieval and Renaissance Studies. 3 units. *Witt*

**222C, S. Petrarch.** Focuses on the major works of fourteenth-century Italian humanist, Francesco Petrarch. 3 units. *Witt*

**223S, 224S. The World Wars.** The causes, course, and consequences of World Wars I and II, from military, political, and economic perspectives; the legacy of World War II; special emphasis on understanding the experience of total war—not only for the individual soldier but for whole societies. 3 units each. *Biddle*

**225S. Problems in Comparative Labor History.** Common dilemmas and varying solutions in the cross-national development of labor-management relations, their political implications, and their larger historical significance. 3 units. *French or Keyssar*

**226. Topics in the Labor History of the United States.** 3 units. *Keyssar*

**229S. Historical and Anthropological Approaches to Emotions.** Emotion as a collective and historical phenomenon; works by both historians and ethnographers of the last twenty years; dilemmas that arise in the search for an adequate theorization of emotion, and its location vis-à-vis the public/private divide. C-L: Cultural Anthropology 229S. 3 units. *Reddy*

**230S. Populism in Latin America.** An examination of the various theoretical frameworks developed for Latin American populism, followed by case studies focusing on issues such as the emergence of a modernizing state, the role of the masses in populist movements, and the class content and ideological and cultural parameters of such movements. 3 units. *James*



**233S. Slave Resistance and Social Control in New World Societies.** The operation of slave societies in the Americas from the sixteenth to the nineteenth centuries focusing on master-slave relations and slave resistance. C-L: African and Afro-American Studies 233S. 3 units. *Gaspar*

**234S. Political Economy of Development: Theories of Change in the Third World.** See C-L: Political Science 234S; also C-L: Cultural Anthropology 234S and Sociology 234S. 3 units. *Staff*

**235S. The Antebellum South.** The economic, political, and social aspects of life in the South, 1820-1860. C-L: African and Afro-American Studies 235S. 3 units. *S. Nathans*

**236A. Topics in the History of Monasticism.** The development of western medieval monasticism from its third-century origins in the Egyptian desert through the twelfth-century explosion of devotional communities. Varied topics include monastic anxiety and optimism about the nature of the human will; the origins, meaning, and practical experience of vows to poverty, chastity, stability, and obedience; and the growth of a monastic culture. Designed to guide advanced students through the professional study of monastic institutions and monastic historiography. French, German, or Latin necessary. C-L: Medieval and Renaissance Studies. 3 units. *Peyroux*

**237S. Europe in the Early Middle Ages.** C-L: Medieval and Renaissance Studies. 3 units. *Staff*

**238S. Europe in the High Middle Ages.** C-L: Medieval and Renaissance Studies. 3 units. *Staff*

**239. History of Socialism and Communism.** The origins and development of socialist and communist movements from pre-Marxian times to the present. Not open to students who have taken History 120. 3 units. *Lerner*

**240A. Multinationalism and Multiculturalism: Eastern Europe Example.** 3 units. *Lerner*

**241A, S. The Origins of Totalitarianism, 1924-1954.** The development of the concept of totalitarianism over three decades. Responses to Italian Fascism, German National Socialism, and Soviet Stalinism among European intellectuals. Early theoreticians of totalitarianism: Halévy, Schmitt, Marcuse, Voegelin, Hilferding, Neumann, Hayek, Popper, Arendt, and Friedrich; critiques of the scholarly and ideological uses of totalitarianism. 3 units. *Hacohen*

**242B. The Soviet 1920s: The Road to a New Synthesis.** See C-L: Russian 281. 3 units. *Dobrenko or Lahusen*

**248. History of Modern India and Pakistan, 1857 to the Present.** 3 units. *Richards*

**251A. Topics in Intellectual History of Europe, 1250-1450.** C-L: Medieval and Renaissance Studies. 3 units. *Witt*

**251B. Topics in Intellectual History of Europe, 1450-1650.** C-L: Medieval and Renaissance Studies. 3 units. *Witt*

**252A. Construction of China in European and American Literature.** An examination, starting with Marco Polo's account of China, of representations of China in Euro-American writing toward an understanding of a Euro-American discourse on China. Emphasis on fiction, but consideration as well of the relationship between fictional and nonfictional writing (especially history, geography, and travelogue). While the approach is historical, contemporary representations of China are of primary concern. Not open to students who have taken History 252. 3 units. *Dirlik*

**252B. Culture and Society in Contemporary China.** Developments in Chinese society and culture since 1978, focusing on social changes in China and on matters of

culture. Culture here includes debates on culture and history, as well as various forms of cultural production (literature, film, and popular culture). Parallel developments in Pacific Asia (Japan, Taiwan, and Hong Kong, in particular). 3 units. *Dirlik*

**253S, 254S. European Diplomatic History, 1871-1945.** Origins of the First and Second World Wars, the diplomacy of the wars, and the peace settlements which followed them. 253S: 1871-1918; 254S: 1919-1945. 3 units each. *Staff*

**255A, S. Development of United States Courts of the Fourth Circuit.** Consent of instructor required. See C-L: Political Science 238S; also C-L: Law 548S. 3 units. *Fish*

**256. Modern Literature and History.** See C-L: French 256. 3 units. *Kaplan, Orr, or staff*

**257. Comparative Latin America Labor.** An interdisciplinary examination of the monographic literature on Latin-American labor in the twentieth century. 3 units. *French*

**260. Fifth and Fourth Century Greece.** See C-L: Classical Studies 222. 3 units. *Oates or Rigsby*

**262. The Soviet Experience.** A survey of the history of Russia and the Soviet Union from the eve of the Revolution to the present day with particular emphasis on political, social, and cultural change and continuity. Not open to students who have had History 180. 3 units. *Lerner*

**263. The Roman Republic.** See C-L: Classical Studies 224. 3 units. *Boatwright or Rigsby*

**264. The Roman Empire.** See C-L: Classical Studies 225. 3 units. *Boatwright*

**267S. England in the Sixteenth Century.** C-L: Medieval and Renaissance Studies. 3 units. *Herrup*

**268S. England in the Seventeenth Century.** C-L: Medieval and Renaissance Studies. 3 units. *Herrup*

**271S. The Law of War.** The evolution of constraints on warfare in the Western world, both codified and customary. The concept of the "just war" as well as restrictions on the conduct of combat (ground, naval, and aerial) as they have evolved over time. 3 units. *Biddle*

**272S. Fin-de-siècle and Interwar Vienna: Politics, Society, and Culture.** The cultural milieu of *fin-de-siècle* and interwar Vienna. Freud, Kraus, the Austro-Marxists, Neurath, the Austrian School of Economics, Wittgenstein, the Logical Positivists, Popper, and Musil; monographs on Viennese culture (Schorske), feminism, and Austrian socialism. 3 units. *Hacohen*

**273S, 274S. Topics in the History of Science.** Critical stages in the evolution of scientific thought. 3 units each. *Mauskopf*

**275S. Asian and Asian-American Women in Comparative Perspective.** A woman-centered approach to the history of colonialism and nationalist struggles in Asia, the evolution of racist discourse and its impact on Asian immigration to the United States. 3 units. *Mazumdar*

**276A. Asian-American Experience.** History of Asian Americans in the United States to World War II, focusing on immigration, conditions in the homeland which fostered immigration, and the legislative barriers such as the exclusion acts which prevented the immigration of Asians. The United States in the context of a global political economy; the impact of colonialism and imperialism in the shaping of Asian-American experience. 3 units. *Mazumdar*

**277S. The Coming of the Civil War in the United States, 1820-1861.** 3 units. *Staff*

**278S. The Civil War in the United States and Its Aftermath, 1861-1900.** 3 units. *Staff*

**279, 280. Health, Healing, and History.** The development of medicine within the broader cultural context from prehistory to the twentieth century. 3 units each. *English*

**281S. United States' Diplomacy since 1945.** 3 units. *Staff*

**282S. Canada.** A research seminar for advanced students familiar with Canada. Topics vary each semester; recent perspectives have included nationalism, Canadian-American relations, regionalism in the Maritimes and the West, and cross-border environmental issues, among others. C-L: Cultural Anthropology 282S, Economics 282S, Political Science 282S, and Sociology 282S. 3 units. *Thompson or staff*

**285S, 286S. Oral History.** Research on race relations and civil rights in the United States in the twentieth century using techniques of oral history. Consent of instructor required. 3 units each. *Chafe and Goodwyn*

**287S. American History and Social Theory.** Contemporary theories of social order, social change, and revolution. 3 units. *Goodwyn*

**288S. Germany and Japan in World War II.** A comparative inquiry into the experience of these two capitalist "late developing" nations that turned to fascism and militarism in the 1930s. Topics include business and the state in wartime mobilization, wartime labor and productivity, the experience of women at work and at home, impact of firebombings, wartime propaganda and racism, postwar memory of the wartime era. 3 units. *Koonz*

**289S. War, Revolution, and Society in the Caribbean 1700-1815.** Explores the complex impact of European imperialism and the American, French, and Haitian revolutions upon Caribbean societies to the end of the Napoleonic wars. Military, economic, social, political, and institutional theories examined. 3 units. *Gaspar*

**290S. Theoretical Bases of Social Interpretation.** An interdisciplinary course on the historical development of theoretical formulations of particular importance to social historians and cultural anthropologists. Examines several fundamental problems posed by any effort to interpret social life. Considers how these problems show up and are handled within a number of approaches, loosely grouped as metaphysics, language, identity, and practice. C-L: Cultural Anthropology 220S. 3 units. *Reddy*

**291S. Modern Jewish Politics.** The development of the main currents in modern Jewish politics—nationalism, integrationism, and orthodoxy. Emphasis on the activities of these political movements in Europe and in the United States in the twentieth century. The influence of these movements on Israel. 3 units. *Mendelsohn*

**292. Research Methods in Japanese.** Consent of instructor required. See C-L: Japanese 291; also C-L: Cultural Anthropology 290, Political Science 291, and Sociology 291. 3 units. *Staff*

**293. French Liberalism: An Intellectual History, 1815-1981.** Historical study of major French liberal thinkers in their political, social, and intellectual contexts. Readings in De Staël, Constant, Guizot, Tocqueville, Durkheim, Halévy, and Aron and historiography. Major themes: revolution, restoration, and liberalism's origins; liberals, the July Monarchy, and 1848; Durkheim, the Third Republic, and the new liberalism; World War I, totalitarianism, and contemporary French liberalism. 3 units. *Hacohen*

**294S. Women and Medicine in the United States.** The history of women as patients and practitioners from the colonial era to the present. The concept of "practitioner" broadly defined, to include domestic medicine, midwives, nurses, physicians, and other "alternative" medical women. Themes include birth control, women's control of their



own bodies, sources of authority for medical practice, race and health, and the underlying general history of medicine in the United States. 3 units. *Humphreys*

**295S. Slavery and Freedom in Africa, to 1960.** How Africans created variations on the global themes of servility, slavery, and freedom. Includes various forms of slavery in Africa; gender and slavery; slave trades; the impact of the Atlantic economy on slavery in Africa; colonial policies of "emancipation," labor control, and labor coercion; African intellectual responses to the problem of slavery and African expressions of freedom, including freedom from colonial rule. C-L: African and Afro-American Studies 292S. 3 units. *Ewald*

**296. United States Policy in the Middle East.** See C-L: Public Policy Studies 257. 3 units. *Kuniholm*

**297. War and the National State.** No prerequisite, but Political Science 93 recommended. See C-L: Political Science 288. 3 units. *Goemans*

**299S. Special Topics.** Seminars in advanced topics, designed for seniors and graduate students. Some semesters open to seniors and graduate students; some semesters limited to graduate students only. 3 units. *Staff*

### **Required Courses for Graduates**

**301-302. Research Seminar in History.** This seminar is required of all entering first-year doctoral candidates in history. 6 units. *Staff*

**312. Seminar in the Teaching of History in College.** This course is intended to acquaint students with the problems involved in teaching history in college. Required of all candidates for the degree of Doctor of Philosophy who are in residence for two years at Duke. As an alternate method of meeting this requirement, a graduate student may, in cooperation with a member of the faculty, serve a one-semester teaching apprenticeship. Supervised by director of graduate studies. No credit.

### **Colloquia and Seminars for Graduates**

**305. The British Empire: Recent Interpretations.** Colloquium emphasizes recent interpretations of the following topics: (1) the imperialism of free trade; (2) nineteenth-century India; (3) the new imperialism; (4) nationalism and decolonization (India and Africa); (5) Empire to Commonwealth; (6) imperialism and gender. 3 units. *Staff*

**306. Problems in British Imperialism.** Selected readings on significant aspects of the history of the British Empire-Commonwealth: for example, Ireland, South Africa, and India. 3 units. *Cell*

**309S, 310S. Seminar in Afro-American History, 1870s to the Present.** Historiography and research on the black experience and race relations after the general emancipation, in the age of segregation, during the Civil Rights Movement, and in the post-civil rights era. C-L: African and Afro-American Studies 309S, 310S. 3 units each. *Gavins*

**315. Topics in British History.** 3 units. *Thorne*

**320S. The Working Class in the United States.** 3 units. *Keyssar*

**325S. Topics in Modern American Political and Social History.** 3 units. *Keyssar*

**326S. Introduction to Military History.** Critical reading and discussion of classic works and studies representative of the major genres in the field. 3 units. *Biddle and Roland*

**327S. History of Sexuality in Europe.** 3 units. *Koonz*

**328S. War and Society in Early Modern Europe.** A study of the relationship between war, state formation, economic developments, social structures, gender relations, and

art and literature between 1500 and 1789. C-L: Medieval and Renaissance Studies. 3 units. *Neuschel*

**329S. Topics in Cold War History.** A study of key Cold War issues from the atomic bomb to the collapse of the Soviet Union. 3 units. *Biddle*

**330S. Selected Topics in Brazilian History.** C-L: African and Afro-American Studies 330S. 3 units. *French*

**335S. Comparative Labor History.** Selected topics and methodological and historiographical controversies in the labor history of two or more world regions. 3 units. *Fink and French*

**340S. Topics in Modern Latin American Social and Political History.** Empirical case studies and methodological and historiographical themes in nineteenth-and twentieth-century Latin America. 3 units. *James*

**345. Latin American Oral History.** 3 units. *James*

**350. The Words and Works of Peronismo.** Explores practices and discourses associated with Peronismo in twentieth-century Argentina. Addresses questions by examining a variety of elements of Peronist archive, from literary to history accounts, from journalistic to political documents, from cinematic to plastic renderings. 3 units. *James*

**351-352. Colloquia.** Each colloquium deals with an aspect of history by means of readings, oral and written reports, and discussion, with attention to bibliography. *Ad hoc* colloquia may be worked out during registration in the various fields represented by members of the graduate faculty; these colloquia do not appear on the official schedule of courses. In some instances, students may take the equivalent of a research seminar in conjunction with the colloquium and will be credited with an additional 6 units by registering for 371.1-372.1, etc. C-L: Women's Studies. Variable credit.

**356. History and Culture of Islamic Cairo.** See C-L: Religion 356. 3 units. *Cornell*

**357S. Labor Systems in African History.** A survey of various forms of labor in Africa, during the precolonial, colonial, and postcolonial eras, focusing on a central historical problem—the formation of a working class—in an African context. Beginning with an examination of precapitalist forms of labor, the course then explores how men and women became—or did not become—wage workers; how they conceptualized their work and created—or did not create—new identities and cultural expressions; how workers organized and agitated—or, again, did not—for social and political change. 3 units. *Ewald and Newbury*

**371-372. Research Seminars.** To be taken either in conjunction with colloquia listed above or by special arrangement with appropriate graduate instructors when research seminars in a desired area are not offered. These seminars do not appear on the official schedule of courses. 6 units. *Staff*

**376. Women in Nineteenth and Twentieth Century from a Comparative Perspective.** Explores the physiology of gender and sex; the domestic servant; the origins of the women's suffrage movement; the emergence of "bourgeois" family values and "Victorian" notions of sexuality; gender in reactionary political movements; the use of memory as historical evidence; and women factory workers. Students may choose topics in two national settings. 3 units. *Koonz*

**389. Seminar in Conservation and Environmental History.** Traces the evolution of conservation and environmental movements and the development of environmental ethics. History of agencies, industries, associations, and citizen groups as well as overall policies for land and resources. Comparison of parallel developments in Canada. Consent of instructor required. C-L: Environment 389. 3 units. *Steen*

## Independent Study

**399. Special Readings.** Supervised independent study and reading. Consent of instructor required. 3 units. *Staff*

**N.B.** For the most current listing of scheduled courses, please refer to the most recent Duke University *Official Schedule of Courses* printed twice a year.

## COURSES CURRENTLY UNSCHEDULED

204. German Society, 1914-1945

205S. Gender and War

206. Origins of Afro-America

207S. Geographic Perspectives in History I: Western Europe and the Americas

208S. Geographic Perspectives in History II: Asian and Pacific Worlds

212. The American Indian in the Revolutionary Era, 1760-1800

215S. The United States in International Relations: The Eighteenth and Nineteenth Centuries

217. Problems in American Colonial History

227-228. Recent United States History: Major Political and Social Movements

231S. Readings in Latin American Colonial History

243-244. Marxism and History

245, 246. Social and Intellectual History of China

247. Mughal India

249-250. Social and Intellectual History of the United States

258S. Social Conflict in Weimar and Nazi Germany

259. Archaic Greece

261. Alexander and the Hellenistic World

265S. Problems in Modern Latin American History

266. Late Antiquity

269S-270S. British History, Seventeenth Century to the Present

314. Historical and Social Science Methodology

## The Master of Arts Program in Humanities

Professor A. Leigh DeNeef, *Director* (English)

The Master of Arts Program in Humanities is an interdepartmental program tailored to the needs of individual students. The candidate defines a theme and selects appropriate course work with the aid and approval of a supervising committee. Thirty units of course work is required for completion of the program. The degree may be earned with or without a thesis. The candidate who chooses not to submit a thesis will submit instead at least two substantial papers arising from course work for review by committee members, and meets with them to discuss his or her program in a final master's colloquium.

The program is open to holders of undergraduate degrees in any discipline who can demonstrate sufficient background in humanities to permit study at the graduate



level. Admission is by regular application to the Graduate School. Students may enroll full time or part time. The program also participates in the general set of joint J.D.-M.A. programs offered at Duke.

## Center for Hydrologic Science

Stuart Rojstaczer, Ph.D., *Director*

The Center for Hydrologic Science is an active group of faculty engaged in a broad suite of hydrology research. Faculty and their associated students and postdoctoral researchers are from three schools at Duke: Arts and Sciences, Engineering, and the Environment. The interdisciplinary nature of the center reflects the interdisciplinary nature of the field of hydrology and most faculty hold joint professorships in at least two of the three schools. The center is designed to provide a cohesive program for research and graduate level education in hydrology. Research specialties of the faculty include contaminant hydrology, crustal fluids, environmental geophysics, hydrogeology, mathematical models of multiphase transport, waste treatment, and watershed hydrology. The broad range of faculty expertise in hydrology allows graduate students to obtain well-balanced training in the classroom.

The center offers fellowships for graduate study in hydrology and organizes a lecture series that attracts speakers of international stature. Monthly brown bag colloquia are organized for student and faculty presentations from Duke, as well as from nearby University of North Carolina and North Carolina State University. For students engaged in Ph.D. research, the center through the Graduate School offers a Certificate in Hydrology that is granted in addition to the Ph.D. in their host department.

Further information on the Center for Hydrologic Science and its certificate program may be obtained via mail (Stuart Rojstaczer, Director, Center for Hydrologic Science, Box 90230, Duke University, Durham, NC 27708).

## Immunology

Professor Tedder, *Chair* (353 Jones); Professor Dawson, *Director of Graduate Studies* (317 Jones); Professors Buckley, Haynes, McClay, Rosse, and Ward; Associate Professor Krangel; Assistant Professors Doyle, Markert, McHeyzer-Williams, Pisetsky, and Zhuang; Research Associate Professor Balber; Professors Emeriti Amos and Metzgar

The department offers graduate work leading to the Ph.D. degree. Research programs are available in various aspects of molecular and cellular immunology, including immunochemistry and immunogenetics. Immunology is the study of the cells and proteins that comprise the complex biological defense mechanisms protecting vertebrate species from their environment. It encompasses both natural, nonspecific defense mechanisms and acquired, specific immune responses to foreign antigens that lead to the development of immunologic memory. The department's focus is on lymphocytes and the products of lymphocytes that amplify molecular and cellular mechanisms of antigen (pathogen) elimination. Immunology is by its nature a bridging science. As a discipline, it has its roots in the defense against infectious disease, the development of vaccines, organ transplantation, immune responses to malignancy, and a variety of immunotherapies. Modern research in immunology draws on recent advances in cell and molecular biology, protein chemistry, and virology to determine how the components of the immune system function. In turn, the study of cells of the immune system has contributed to our understanding of protein structure, eukaryotic gene organization and regulation, and intracellular protein transport and assembly.

The department is a participating member in the interdisciplinary University Programs in Cell and Molecular Biology and Genetics, and the Medical Scientist Training Program.

The department has excellent facilities for carrying out all aspects of immunologic, cell biologic, and genetic research. A brochure describing the Ph.D. program, prerequisites for admission, and research in the department may be obtained by writing to the Director of Graduate Studies, Department of Immunology, Box 3010, Duke University Medical Center, Durham, NC 27710.

**214. Fundamentals of Electron Microscopy.** See C-L: Microbiology 214. 3 units. *Miller*

**219. Molecular and Cellular Bases of Differentiation.** See C-L: Cell Biology 219; also C-L: Neurobiology 219 and Pathology 219. 3 units. *Counce and staff*

**244. Principles of Immunology.** An introduction to the molecular and cellular basis of the immune response. Topics include anatomy of the lymphoid system, lymphocyte biology, antigen-antibody interactions, humoral and cellular effector mechanisms, and control of immune responses. Prerequisites: Biology 119 and Chemistry 151L or equivalents. C-L: Zoology 244. 3 units. *Kostyu, McClay, and staff*

**246S. Parasitic Diseases.** Topics in the physiology and immunology of major human and animal parasites with an emphasis on protozoa and schistosomes. Extensive reading in and discussion of current literature. Basic parasitology developed in introductory readings and lectures. Prerequisites: Biochemistry 227 or equivalent; and Immunology 244 or Immunology/Microbiology 291. 3 units. *Balber*

**252. General Virology and Viral Oncology.** See C-L: Microbiology 252. 4 units. *Keene and staff*

**259. Molecular Biology I: Proteins and Enzymes.** Prerequisites: biochemistry, organic chemistry, and physical chemistry. See C-L: Biochemistry 259; also C-L: Cell Biology 259, Microbiology 259, and Molecular Biophysics 259. 3 units. *Fierke and staff*

**268. Molecular Biology II: Nucleic Acids.** Prerequisites: introductory biochemistry and equivalents of Biochemistry 259 and Cell and Molecular Biology 247, 277, and 278. See C-L: Biochemistry 268; also C-L: Cell Biology 268, Microbiology 268, and The University Program in Genetics 268. 4 units. *Steege and staff*

**269. Advanced Cell Biology.** Prerequisite: introductory cell biology or consent of instructor. See C-L: Zoology 269; also C-L: Botany 269 and Cell Biology 269. 3 units. *Siedow and staff*

**291. Comprehensive Immunology.** An intensive course in the biology of the immune system and the structure and function of its component parts. Major topics discussed are: properties of antigens; specificity of antibody molecules and their biologic functions; cells and organs of the lymphoid system; structure and function of complement; inflammation and nonspecific effector mechanisms; cellular interactions and soluble mediators in lymphocyte activation, replication, and differentiation; regulation of immune responses; neoplasia and the immune system; molecular structure and genetic organization of immunoglobulins, histocompatibility antigens, and T-cell receptor. Required course for all students specializing in immunology. C-L: Microbiology 291. 4 units. *Krangel and staff*

**300. Tumor Immunology.** An advanced seminar based on original literature. Topics include a general introduction to malignancy and immune responses associated with them, regulation of the immune response to tumor, vaccine development, the role of gene therapy, the use of tumor-reactive monoclonal antibodies, and characteristics of tumor antigens. Prerequisite: Immunology 291. 2 units. *Gilboa, Tedder, and staff*

**310. Molecular Development.** See C-L: Microbiology 310. 2 units. *Linney*

**330. Medical Immunology.** A brief review of basic concepts in immunology followed by in-depth discussions of the role of immune mechanisms in the pathogenesis and treatment of human diseases. Principle emphasis on immune deficiency diseases,



hypersensitivity, alloimmunity, transplantation, infectious diseases, autoimmunity, tumor immunology, and immunohematology. 5 units. *Ward and staff*

**332. Immunology Seminar.** Research topics in immunology with seminars presented by students, faculty, and outside speakers. Required course for all students specializing in immunology. 1 unit. *Doyle and staff*

**335-336. Current Topics in Immunology.** Focus on current immunology research, emphasizing emerging research areas and new directions in established areas. Students present recent papers in selected subjects. 2 units. *Dawson and staff*

## COURSES CURRENTLY UNSCHEDULED

### 304. Molecular Membrane Biology

## Program in Integrative Biology

Frederik Nijhout, Ph.D., *Director*

The Program in Integrative Biology is an interdepartmental program that encourages students to think broadly and synthetically about problems of interest to biology, and to use the methods and approaches of several different biological disciplines in their solution. The program provides a counterpoise to the increasing narrowness of specialization that has characterized training in many subdisciplines of biology. Breadth of knowledge and an integrative approach to problem solving in such areas as development and evolution, systematics, functional morphology and biomechanics, neurobiology and behavior, and other cross-disciplinary fields, are established by close interaction with participating faculty members and by participation in seminars, workshops, and discussion groups. Graduate students in the program have access to research laboratories of the participating faculty members as well as such research facilities as the Morphometrics Laboratory, the Botany Greenhouses, the Fluid Flow Facility, the Primate Center, the Duke University Marine Laboratory, various vertebrate and invertebrate collections, the Botany Herbarium, the Duke Forest, and the Zoology Field Station. For more information, contact Professor Frederik Nijhout, Program in Integrative Biology, 226 Biological Sciences Building, Duke University, Durham, North Carolina 27706. (919) 684-2507 or (919) 684-3583.

## Program in International Development Policy

The Program in International Development Policy (PIDP) is offered through the Center for International Development Research at Duke's Sanford Institute of Public Policy. The PIDP provides from one semester to two years of training in policy analysis and problems related to sustainable economic development. Most participants in the program—known as PIDP fellows—have at least five years' experience as practitioners or applied researchers in a development related field. They represent diverse nationalities, academic interests, and professional backgrounds.

The PIDP admits both degree and nondegree participants. Degree candidates normally spend two academic years fulfilling the requirements for the Master of Arts in International Development Policy. Degree candidates with a significant amount of previous graduate-level course work may be eligible to complete the A.M. in one calendar year. Certificates of graduate study are awarded to nondegree candidates.

All participants are required to take at least two PIDP seminars each semester and two additional graduate-level courses in related fields (e.g., public policy, economics, political science, environment, business). Participants in their first year are required to take two core seminars: one in economic development and one in either environmental or institutional development policy. Those participants who do not have sufficient preparation in economics are required to take an economics course their first semester.



All degree candidates are required to complete a master's project in their final semester. Only two-year degree candidates are required to have an internship or to conduct independent research during the summer between their first and second year of the program. Limited scholarships are available. For further information and application materials, contact the Program in International Development Policy, Duke University, Box 90237, Durham, North Carolina, 27708-0237.

## **The Duke–University of North Carolina Program in Latin American Studies**

Deborah Jakubs, Ph.D., *Associate Director* (2114 Campus Drive)

The Duke–UNC Program in Latin American Studies cooperates with the Council on Latin American Studies to oversee and coordinate graduate education in Latin American studies at Duke. Graduate students in Arts and Sciences as well as professional school students may concentrate their studies on Latin America. In addition to fulfilling the requirements of their departments, students of Latin American studies may undertake special courses of interdisciplinary study, or those offered by other departments, to broaden their knowledge of the region and to earn a graduate certificate in Latin American Studies. To earn this certificate, students in M.A. and Ph.D. programs must fulfill the following specific academic requirements:

1. six graduate courses on Latin America;
2. an approved thesis prospectus or departmental equivalent on a Latin American topic; and
3. a working knowledge of Spanish, Portuguese, or other language of Latin America or the Caribbean, such as Yucatec Maya, Quechua, Haitian Creole, etc.

(For additional information about the council and the graduate certificate in Latin American Studies, see the section on special programs in this bulletin.)

The interdisciplinary focus of the graduate program is enhanced by the numerous activities of the Duke–UNC program, which offers graduate students at Duke an array of intellectually challenging opportunities to broaden their disciplinary training. The single most important initiative of the Duke–UNC program is the sponsorship of interdisciplinary working groups that bring together faculty and graduate students from both campuses to conduct research and training in areas of central concern to Latin American studies. The objective is to move beyond the seminar format that dominates graduate education in the social sciences and humanities, and to focus instead upon training graduate students in a manner similar to the direct research collaboration that typically characterizes training in the natural sciences. The groups focus on topics such as political economy, the environment, culture, gender issues, religious change and labor issues in Latin America. The program also sponsors a Graduate Student Colloquium designed to encourage interaction between the two graduate student bodies and administers a competition for graduate student travel grants each spring. These awards provide Duke students with the opportunity to deepen their disciplinary interests in the region through relatively brief periods of research in Latin America. In 1991 the Duke–UNC program was designated a National Resource Center for Latin American Studies by the U.S. Department of Education. This honor is accompanied by funding for a number of new activities as well as Foreign Language and Area Studies (FLAS) Fellowships for graduate students.

**200S. Seminar in Latin American Studies.** Interdisciplinary study of geographical, historical, economic, governmental, political, and cultural aspects of modern Latin America and the current issues facing the region. Specific topics will vary from year to year. For juniors, seniors, and graduate students. 3 units. *Staff*

## Courses with Latin American Content Offered by Departments

- Biological Ecology. *Terborgh*  
 Botany 300. Tropical Botany. *Stone*  
 Cultural Anthropology 280S. Anthropology and Cultural Studies. *Starn*  
 Cultural Anthropology 280S. Sex, Gender, and Heresies in the Making of Colonial Latin America. *Silverblatt*  
 Cultural Anthropology 280S. Statemaking and Cultural Revolution. *Silverblatt*  
 Economics 231S. Economic Development in Latin America. *Staff*  
 Economics 286S. Policy-Making in Developing Countries. *Ramachandran*  
 Education 205. Higher Education in Latin America. *DiBona*  
 English 381. Post-Colonial Literature. *Moses*  
 Environment 217. Tropical Ecology. *Terborgh*  
 Environment 277. Conservation and Sustainable Development I: Concepts and Methods. *Staff*  
 Environment 278. Conservation and Sustainable Development II: Integrated Problem-Solving. *Staff*  
 History 224. History of Social Movements in Peru. *Staff*  
 History 225. Comparative Labor History. *Fink or French*  
 History 230. Populism in Latin America. *James*  
 History 231S. Readings in Latin American Colonial History. *TePaske*  
 History 233. Slave Resistance and Social Control in New World Societies. *Gaspar*  
 History 257. Comparative Latin American Labor. *French*  
 History 265S. Problems in Modern Latin American History. *Staff*  
 History 289S. War, Revolution, and Society in the Caribbean. *Gaspar*  
 History 330S. Brazilian Race Relations. *French*  
 History 340S. Latin American Social and Political History. *French*  
 History 350. Words and Works of Peronism. *James and Moreiras*  
 History 351. Colloquium on Latin American Colonial History. *TePaske*  
 Literature 285. Literature and Ideology. *Cooke and Mignolo*  
 Literature 285. Literature and Ideology: Worlds and Texts, C. L. R. James. *Surin*  
 Literature 287. Spanish-American Literature. *Dorfman*  
 Literature 291. Topics in Popular Culture and Media. *Willis*  
 Literature 292. Topics in Non-Western Literature and Culture: Do the Americas Have a Common Literature? *Pérez-Firmat*  
 Literature 293. El Salvador, 1980-1992. *Moreiras*  
 Literature 295. Representation in a Global Perspective. *Hardt*  
 Literature 295. Beyond Occidentalism: Rethinking How the West Was Born. *Mignolo*  
 Literature 295. Representation in a Global Perspective: The Ends of Latin-Americanism. *Moreiras*  
 Literature 302. Seminar in Emergent Literatures: The Challenge of the Testimonio. *Dorfman*  
 Political Science 200. Political Economy in Latin America. *Staff*  
 Political Science 253S. Comparative Government and the Study of Latin America. *Archer*  
 Political Science 381. Research Seminar in Latin American Government and Politics. *Staff*  
 Political Science 399. Readings on Latin American Politics. *Archer*  
 Portuguese 200S. Cultural Heritage of the Brazilian Northeast. *Damasceno*  
 Portuguese 200S. Seminar in Luso-Brazilian Literature: Africa and the African Diaspora in Portuguese. *Anderson*  
 Public Policy Studies 264S. Natural Resources and Sustainable Development. *Miranda*  
 Public Policy Studies 267S. Policy-Making in International Organizations. *Ascher*  
 Public Policy Studies 284S. Public Policy Process in Developing Countries. *Ascher*  
 Public Policy Studies 286S. Economic Policy-Making in Developing Countries. *Conrad*  
 Public Policy Studies 325S. Program in International Development Policy Sector Seminar: Urban and Rural Development. *Ascher*  
 Public Policy Studies 327. Privatization and the Role of the State. *Arcia*  
 Public Policy Studies 327. Appropriate Technology and Transfer. *Ramachandran*  
 Public Policy Studies 327E. Structural Adjustment and Poverty. *Arcia*  
 Religion 263. Third World Theology. *Berger*  
 Sociology 222. Societal Transformation. *Gereffi*  
 Sociology 224C. Urbanization and Migration. *Musckin*  
 Sociology 225. International Environment. *Gereffi*  
 Spanish 241. Colonial Prose of Spanish America. *Staff*  
 Spanish 245. Modern Spanish-American Poetry. *Staff*  
 Spanish 248. Studies in Spanish-American Literature. *Dorfman or staff*  
 Spanish 341. Colonial Prose of Spanish America. *Staff*  
 Spanish 342. Colonial Poetry and Theater of Spanish America. *Staff*  
 Spanish 344. Philosophy, Culture, and History in Latin America: The Politics of Labeling. *Mignolo*  
 Spanish 346. Modern Spanish-American Fiction. *Pérez-Firmat*  
 Spanish 391. Hispanic Seminar. *Staff*  
 Spanish 392. Theory of Latino Literature. *Dorfman or Pérez Firmat*



Spanish 392. Repression and Resistance in the Southern Cone. *Dorfman*  
Spanish 392. Alfabetización de Traducciones Orales. *Mignolo*  
Spanish 392. Narrativas de Objeto Periodístico. *Moreiras*  
Spanish 392. Literature of Emerging Countries. *Dorfman*  
Spanish 392. Julio Cortazar. *Dorfman*

## The Master of Arts in Liberal Studies Program

Diane Sasson, Ph.D., *Director*

This interdisciplinary program allows individuals with a variety of professional and personal educational interests the flexibility to pursue their goals across traditional disciplinary boundaries. The program is managed by an interdepartmental committee which admits students, selects courses, and determines policy. Students study primarily on a part-time basis and choose from an array of interdisciplinary courses developed specifically for this program. In addition to the special liberal studies courses, students may select courses from other departments in the Graduate School.

The MALS program consists of nine courses and a final project. These courses are offered during three academic terms (fall, spring, and summer) and may be taken either on a full-time or part-time basis. The final project, which may take the form of academic research, applied research, or creative work, provides an opportunity for the student to apply the knowledge and skills gained through the program to an independent activity of the student's own design. For more information on specific courses and other program requirements, a separate bulletin on the Master of Arts in Liberal Studies may be requested from the Program Director (Box 90095, Duke University, Durham, North Carolina 27708, (919) 684-3222), e-mail [mals@acpub.duke.edu](mailto:mals@acpub.duke.edu).

## The Program in Literature

Professor Jameson, *Chair* (Graduate Program in Literature and French); Professor Surin, *Director of Graduate Studies* (Graduate Program in Literature and religion); Professors Fish (English and law), Kaplan (French and Graduate Program in Literature), Lentricchia (Graduate Program in Literature and English), Mignolo (Spanish and Graduate Program in Literature), Moi (Graduate Program in Literature and French), Mudimbe (Graduate Program in Literature, French, and cultural anthropology), Radway (Graduate Program in Literature), Rolleston (Germanic languages and literature), B. H. Smith (Graduate Program in Literature and English), Stewart (French and Graduate Program in Literature), Thomas (French and Graduate Program in Literature), and Tompkins (English); Associate Professors Gaines (Graduate Program in Literature and English), Lahusen (Slavic languages and literature and Graduate Program in Literature), Moreiras (Spanish and Graduate Program in Literature), and Willis (English and Graduate Program in Literature); Assistant Professors Fischer (Graduate Program in Literature and Spanish) and Hardt (Graduate Program in Literature); Research Professor Dorfman (Graduate Program in Literature and Latin American studies)

The interdepartmental program leading to a Ph.D. in literature offers to qualified students the opportunity to develop individual courses of study with a strong emphasis on interdisciplinary work, literary theory, and cultural studies, while at the same time allowing students to specialize in one or more of the national literatures. The program offers both introductory courses (the 250 series) and more specialized seminars (the 280 series), as well as tutorials (300) in specific research projects or problems.

For tutorials, advising, and dissertation supervision the program draws also on the expertise of other faculty such as Professor C. Davidson (English), Professor Wharton (art); Professor Newton and Associate Professor Burian (classical studies); Professors Ryals, Sedgwick, and Torgovnick (English); Professor Tetel and Professor Orr (French); Assistant Professors Hell and Risholm, Associate Professor Morton (German); and Associate Professor Lahusen (Slavic). Students entering the program must present



evidence of ability to read one language other than English, and must acquire reading competence in a second language before taking their preliminary examinations.

Students in the Literature Program are normally expected to take a minimum of fifteen courses, six of which should be in literature and six in a "teaching field" of their choice. All first-year students take Literature 251 on the history of aesthetics and criticism through the nineteenth century.

More information on the program and a full descriptive brochure is available from Professor Surin, Director of Graduate Studies, Art Museum 104, Duke University, Durham, North Carolina 27708-0670.

**200S. Seminar in Asian and African Cultural Studies.** See C-L: Asian and African Languages and Literature 200S; also C-L: Cultural Anthropology 288S. 3 units. *Staff*

**211. Theory and Practice of Literary Translation.** Linguistic foundations and historical role of translation. Practical exercises and translation assignments. Prerequisites: working knowledge of a foreign language and consent of instructor. 3 units. *Burian*

**212. Studies in Narrative.** Topics to vary. 3 units. *Staff*

**214. Gender, Nationalities, and Russian Literary Traditions.** See C-L: Russian 214; also C-L: Women's Studies. 3 units. *Gheith*

**251. History of Criticism.** A historical survey of critical and philosophical concepts affecting the definition and evaluation of literature from Plato through the nineteenth century. 3 units. *Hardt, Jameson, Lentricchia, Moreiras, or Stewart*

**252. Criticism and Literary Theory in the Twentieth Century.** Introduction to critical movements, philosophies, and strategies forming contemporary theories of literature: deconstruction, feminism, formalism, Marxism, New Criticism, phenomenology, psychoanalysis, structuralism. May be repeated for credit according to change of content or instructor. 3 units. *Jameson or Rolleston, with guest lecturers*

**253. Philology, Linguistics, and the Roots of Literature.** A survey of the various ways in which language and literature interact, with an introduction to philology and historical linguistics. 3 units. *Andrews (Slavic) or Thomas*

**279. The Bestseller: Cultural Populism in the 1990s' China.** See C-L: Asian and African Languages and Literature 259; also C-L: Cultural Anthropology 263. 3 units. *Wang*

*(The 280-290 series implies prior knowledge of literary theory, past and present; these courses are open to graduate students and qualified seniors only.)*

**281. Paradigms of Modern Thought.** Specialized study of the work of individual thinkers who have modified our conceptions of human reality and social and cultural history, with special emphasis on the form and linguistic structures of their texts considered as "language experiments." Topics will vary from year to year, including: Marx and Freud; J.-P. Sartre; Walter Benjamin; etc. 3 units. *Jameson, Moi, Mudimbe, or Surin*

**282. Contemporary Literary Theory.** Specialized studies in literary theory from Saussurean linguistics to the present day (e.g., deconstruction, feminism, new historicism, neopragmatism, reception theory). 3 units. *Fish, Jameson, Lentricchia, or Tompkins*

**283. Modernism.** Aspects of the "modern," sometimes with emphasis on the formal analysis of specific literary and nonliterary texts (Joyce, Kafka, Mahler, Eisenstein); sometimes with a focus on theories of modernism (Adorno), or on the modernism/post-modernism debate, or on the sociological and technological dimensions of the modern in its relations to modernization, etc. 3 units. *Jameson or Lentricchia*

**284. The Intellectual as Writer.** History and theory of the literary role of the intellectual in society (e.g., in Augustan Rome, the late middle ages, the Renaissance, America, Latin America). 3 units. *Jameson, Lentricchia, Moi, Mudimbe, or Surin*

**285. Literature and Ideology.** The theoretical problem of the relationship between literature and ideology, explored through the cultural history of genres, major writers, or aesthetic movements. 3 units. *Jameson, Lentricchia, or Mudimbe*

**286. Topics in Legal Theory.** A consideration of those points at which literary and legal theory intersect (e.g., matters of intention, the sources of authority, the emergence of professional obligation). 3 units. *Fish*

**287. Problems in Narrative Analysis.** An introduction to contemporary theories and methods of narrative analysis (Greimas, Barthes, Hayden White, etc.), with emphasis on a specific area (e.g., historiography, film, sub-genres of the novel, myth, cognitive discourse). 3 units. *Jameson, Mudimbe, or Radway*

**288. Basic Issues in the History of Literary Theory.** Issues include attempts to define literature, divergent views of its social functions and psychological effects, and contemporary controversies regarding literary meaning and interpretation. Readings range from classic texts in philosophy of art to contemporary essays in critical theory. 3 units. *B. H. Smith or Stewart*

**289. Topics in Feminist Theory.** 3 units. *Moi, Radway, or Tompkins*

**290. Topics in Psychoanalytic Criticism.** 3 units. *Moi*

**291. Topics in Popular Culture and the Media.** 3 units. *Radway, Tompkins, or Willis*

**292. Topics in Non-Western Literature and Culture.** 3 units. *Mudimbe*

**293. Special Topics in Literature and History.** Relationship of literary texts to varieties of historical experience such as wars, periods of revolutionary upheaval, periods of intense economic growth, "times of troubles," or stagnation. Literary texts and historical content posed in such formal ways as the theoretical problem of the relationship between literary expression and form and a range of historical forces and phenomena. 3 units. *Jameson, Kaplan, or Orr*

**294. Theories of the Image.** Different methodological approaches to theories of the image (film, photography, painting, etc.), readings on a current issue or concept within the field of the image. Examples of approaches and topics are feminism, psychoanalysis, postmodernism, technology, spectatorship, national identity, authorship, genre, economics, and the ontology of sound. 3 units. *C. Davidson, Gaines, or Jameson*

**295. Representation in a Global Perspective.** Problems of representation approached in ways that cross and question the conventional boundaries between First and Third World. Interdisciplinary format, open to exploration of historical, philosophical, archeological, and anthropological texts as well as literary and visual forms of representation. 3 units. *Dorfman, Jameson, or Mignolo*

**296. Feminist Thought Before 1970.** Feminist thought developed before the emergence of the new women's movement; the historical and philosophical issues at stake in the feminist tradition. 3 units. *Moi*

**297. Topics in Cultural Studies.** 3 units. *Gaines, Radway, Surin, and staff*

**298. Topics in Philosophy and Literature.** Exploration of problems common to literary theory and philosophy. Examples of topics include: problems of identity, consciousness, foundationalism, interpretation, or ethics, or schools of thought such as

pragmatism, phenomenology, and existentialism. 3 units. *Flanagan, Jameson, Mudimbe, and Surin*

**299. Universalism in Twentieth-Century Thought.** The Enlightenment tradition and its critical reception in the twentieth century. Readings range from classic Enlightenment texts to contemporary texts. 3 units. *Staff*

**300. Problems in the Theory of Value and Judgment.** An advanced seminar dealing with classic problems relating to the concept of value and evaluative behavior (e.g., standards, judgments, canon-formation, taste), as illuminated by contemporary work in critical theory, anthropology, economics, sociology, etc. C-L: English 386 and Philosophy 300. 3 units. *B. H. Smith*

**301. Language and Theory in the Twentieth Century.** A seminar examining some of the most significant analyses, controversies, and achievements of the various disciplinary approaches to language during the past century and their implications for cultural study. Topics include the question of linguistics as a science, the muddle of meaning and interpretation, approaches to communication as social interaction, the Chomskian episode, and poststructural/postanalytic conceptions and contributions. 3 units. *Fish, B. H. Smith, and Tetel*

**302. Seminar in Emergent Literatures.** An advanced seminar in the literature of Third World or nonwestern countries. Specific topics vary from year to year. 3 units. *Dorfman*

**303. Topics in Criticism and Aesthetics.** Selected readings in traditional and contemporary criticism, philosophical aesthetics, and literary theory. 3 units. *Visiting faculty or staff*

**353. Special Topics in Literature.** Contents and methods vary with instructors and from semester to semester. 3 units. *Staff*

**353S. Seminars in Literature.** Contents and methods vary with instructors and from semester to semester. 3 units. *Staff*

**391. Tutorial in Special Topics.** Directed research and writing in areas unrepresented by regular course offerings. Consent of instructor required. 3 units. *Staff*

**399. Special Readings.** Consent of instructor required. Variable credit. *Staff*

## COURSES CURRENTLY UNSCHEDULED

**254. Introduction to Feminism**

**280. Semiotics for Literature**

## The University Program in Marine Sciences

Professor Ramus (botany and environment), *Director*; Associate Professor Rittschof (zoology and environment), *Director of Graduate Studies*; Professors Barber (botany, environment, geology, and zoology), C. Bonaventura (cell biology and environment), J. Bonaventura (cell biology and environment), Crowder (environment), Forward (zoology and environment), and Pilkey (geology); Assistant Professors Howd (environment and geology) and Lozier (environment, geology, and mechanical engineering and materials science); Professor Emeritus Bookhout (zoology); Professor of the Practice Orbach (environment); Associate Professor of the Practice Kirby-Smith (environment); Assistant Professor of the Practice Read (environment)

Graduate students from any and all academic disciplines are encouraged to take training at the Marine Laboratory. The program operates year-round, providing course



work in the marine sciences, an active seminar program, and facilities supporting dissertation research. Resident graduate students represent the Departments of Botany, Cell Biology, Environment, Geology, and Zoology. Ordinarily, dissertation advisors are resident as well, although this need not be the case. The Marine Laboratory has available graduate student instructional assistantships and fellowships during the academic year, including summer. In addition, tuition credits obtained from fellowship support may be applied to courses given both at the Marine Laboratory and the Durham campus.

Persons interested in graduate work in the marine sciences should apply through one of the appropriate departments (botany, cell biology, environment, geology, mechanical engineering, or zoology). Graduate students planning to enroll in academic course work at the Marine Laboratory during the fall or spring semester should notify the Admissions Office of the Marine Laboratory of such intent at the time of preregistration for the respective semester and must register as normally prescribed. Students planning to enroll in academic course work or graded graduate research at the Marine Laboratory during the summer must submit the appropriate application form to the Admissions Office, Duke University, Nicholas School of the Environment, Marine Laboratory, 135 Duke Marine Lab Road, Beaufort, North Carolina 28516-9721. The application form for enrollment in summer courses is found in the Marine Laboratory 1996-97 bulletin. Students registering for graded research in the fall, spring, or summer should do so under the appropriate departmental numbers.

The following courses are offered at Beaufort. See the Marine Laboratory 1996-97 bulletin for the current schedule of courses.

## FALL, SPRING, OR SUMMER PROGRAM AT BEAUFORT

### For Juniors, Seniors, and Graduates

**Botany 218L. Barrier Island Ecology.** An integration of barrier island plant and animal ecology within the context of geomorphological change and human disturbance. Topics include: barrier island formation and migration, plant and animal adaptations, species interactions, dune succession, maritime forests, salt marshes, sea level rise, conservation policy, and restoration ecology. Field trips to many of the major North Carolina barrier islands. Emphasis on field observation and independent research. (Given at Beaufort.) Prerequisite: introductory biology; suggested: course in botany or ecology. C-L: Environment 218L. 6 units. Evans, Peterson, and Wells (visiting summer faculty)

**Botany 295S, 296S. Seminar.** Credit to be arranged. Variable credit. *Staff*

**Botany 359, 360. Research.** Individual investigation in the various fields of botany. Credit to be arranged. *All members of the Graduate School staff*

**Cell Biology 210. Individual Study.** Directed reading and research in cell biology/physiology. Prerequisite: consent of director of graduate studies. Credit to be arranged. *Staff*

**Cell Biology 243. Environmental Biochemistry.** Introduction to the (macro)molecules of life and fundamental metabolic pathways. Topics are presented in the context of environmental perturbations. Fundamental aspects of energetics, proteins, enzymes, carbohydrates, lipids, and nucleic acids. Emphasis on mechanisms of adaptation, molecular controls, and responses to toxicants. (Given at Beaufort.) Prerequisite: organic chemistry. C-L: Environment 243. 3 units. *C. Bonaventura*

**Cell Biology 244L. Molecular and Cellular Processes in Marine Organisms.** Joint research projects on the adverse effects of environmental pollutants on marine organisms at the cellular and molecular level. Research methodologies include: spectroscopy (UV/VIS, fluorescence and atomic absorption); subcellular fractionation; protein purification and characterization using chromatography and electrophoresis; analysis of pollutant-induced damage to proteins, membranes, and DNA; measurement of activity of enzymatic defense systems. Lectures cover molecular mechanisms of damage and damage control, and concepts that underlie the methods to be used. (Given at Beaufort.) Prerequisite: organic chemistry. C-L: Environment 244L. 4 units. *Staff*

**Environment 208L. Estuarine Ecosystem Processes.** A study of the physical, chemical, and biological processes that control the structure of estuarine communities. Emphasis on field and laboratory techniques and data interpretation. (Given at Beaufort.) Prerequisite: ecology, systematics, or field biology course or consent of instructor. 4 units. *Kirby-Smith*

**Environment 218L. Barrier Island Ecology.** An integration of barrier island plant and animal ecology within the context of geomorphological change and human disturbance. Topics include: barrier island formation and migration, plant and animal adaptations, species interactions, dune succession,

maritime forests, salt marshes, sea level rise, conservation policy, and restoration ecology. Field trips to many of the major North Carolina barrier islands. Emphasis on field observation and independent research. (Given at Beaufort.) Prerequisite: introductory biology; suggested: course in botany or ecology. 6 units. *Evans, Peterson, and Wells (visiting summer faculty)*

**Environment 219L. Marine Ecology.** Factors that influence the distribution, abundance, and diversity of marine organisms. Course structure integrates lectures, field excursions, and independent projects. Topics include characteristics of marine habitats, adaptation to the environment, species interactions, biogeography, larval recruitment, rocky shores, marine mammals, fouling communities, tidal flats, beaches, subtidal communities, and coral reefs. (Given at Beaufort.) Prerequisite: none; suggested—introductory ecology, invertebrate zoology, or marine botany. C-L: Zoology 203L. Four units (fall and spring); 6 units (summer). Variable credit. *Staff*

**Environment 222L. Physical Processes in Coastal Environments.** The physical processes on beaches, the inner continental shelf, and in estuaries, in the context of their implications for the biological and geological environments. Topics to be drawn from the origin of waves and currents, tides, turbulence and mixing transport of sand and larvae. Applications to biomechanics and coastal erosion, and to marine ecology, coastal zone management, and water quality. (Given at Beaufort.) Prerequisites: Mathematics 31 and 32. C-L: Geology 201L. 4 units. *Howd*

**Environment 223L. Behavioral Ecology.** How ecological factors shape foraging, mating, aggressive, and social behavior. Laboratory experiments and field observations from the Outer Banks environment. Independent projects and seminars. (Not open to undergraduates.) Prerequisite: introductory biology. C-L: Zoology 213L. 6 units. *Rubenstein (visiting summer faculty)*

**Environment 225L. Coastal Ecotoxicology and Pollution.** Principles of transport, fates, food-web dynamics and biological effects of pollutants in the marine environment. Laboratory to stress standard techniques for assessing pollutant levels and effects. Prerequisites: introductory chemistry and biology. (Given at Beaufort.) 4 units. *Staff*

**Environment 226. Marine Mammals.** Ecology, social organization, behavior, acoustic communication, and management issues. Focused on marine mammals in the southeastern United States (for example, bottlenose dolphin, right whale, West Indian manatee). Laboratory exercises will consider social organization and acoustic communication in the local bottlenose dolphin population. Open only to undergraduates as Biology 126. (Given at Beaufort.) Prerequisite: introductory biology. 3 units. *Read or staff*

**Environment 226L. Marine Mammals.** Same as Environment 226 with laboratory. Laboratory exercises will consider social organization and acoustic communication in the local bottlenose dolphin population. (Prerequisite: introductory biology. (Given at Beaufort.) 4 units. *Read or staff*

**Environment 228L. Physiology of Marine Animals.** Environmental factors, biological rhythms, and behavioral adaptations in the comparative physiology of marine animals. Not open to undergraduates. (Given at Beaufort.) Prerequisites: introductory biology and chemistry. 4 units (fall); 6 units (summer). *Forward*

**Environment 229L. Biochemistry of Marine Animals.** Functional, structural, and evolutionary relationships of biochemical processes of importance to marine organisms. (Not open to undergraduates.) Prerequisites: introductory biology and inorganic chemistry. 4 units (fall or spring); 6 units (summer). *Rittschof*

**Environment 243. Environmental Biochemistry.** Introduction to the (macro)molecules of life and fundamental metabolic pathways. Topics are presented in the context of environmental perturbations. Fundamental aspects of energetics, proteins, enzymes, carbohydrates, lipids and nucleic acids. Emphasis on mechanisms of adaptation, molecular controls, and responses to toxicants. Prerequisite: organic chemistry. C-L: Environment 243. 3 units. *C. Bonaventura*

**Environment 244L. Molecular and Cellular Processes in Marine Organisms.** Joint research projects on the adverse effects of environmental pollutants on marine organisms at the cellular and molecular level. Research methodologies include: spectroscopy (UV/VIS, fluorescence and atomic absorption); subcellular fractionation; protein purification and characterization using chromatography and electrophoresis; analysis of pollutant-induced damage to proteins, membranes, and DNA; measurement of activity of enzymatic defense systems. Lectures cover molecular mechanisms of damage and damage control, and concepts that underlie the methods to be used. (Given at Beaufort.) Prerequisite: organic chemistry. C-L: Environment 244L. 4 units. *Staff*

**Environment 252L. Statistics and Data Analysis in Earth and Ocean Science.** Techniques commonly used by earth and ocean scientists for the analysis of spatial and/or temporal series of data. Topics include regression, Fourier analysis, nonparametric spectral analysis, and, perhaps, principal components analysis and parametric spectral estimators. (Given at Beaufort.) Prerequisites: Mathematics 31 and 32, Statistics 110 or 112, or consent of instructor. C-L: Geology 222L. 4 units. *Howd*



**Environment 256S. Seminar in Ocean Sciences.** Biological, chemical, physical, and geological aspects of the ocean and their relation to environmental issues. Consent of instructor required. (Given at Beaufort.) 2 units. *Staff*

**Environment 267S. Conservation Biology of Marine Mammals.** Examination of issues affecting the conservation of marine mammal populations, including: habitat loss and degradation, interactions with commercial fisheries, and direct harvests. Consent of instructor required. (Given at Beaufort.) 2 units. *Read*

**Environment 268. Advanced Topics in Nearshore Processes.** Advanced treatment of fluid processes in the nearshore. Topics drawn from nonlinear wave theory, radiation stresses and their gradients, forced and free infragravity waves, and the origins of mean currents in the surf zone. Other topics following students' interests. (Given at Beaufort.) Prerequisite: Environment 290, Mathematics 111 or 114, or consent of instructor. C-L: Geology 204. 3 units. *Howd*

**Environment 269S. Advanced Topics in Marine Ecology.** Theoretical concepts from population, community, and evolutionary ecology will be linked to observations and experiments to enhance understanding of the structure and function of marine systems. Current topics in marine ecology (for example, marine food web dynamics, species interactions, lifehistory strategies, fisheries ecology, conservation biology). Each student will prepare a research proposal in NSF format. May be repeated. (Given at Beaufort.) 2 units. *Crowder*

**Environment 273. Marine Fisheries Policy.** Principles, structure, and process of public policy-making for marine fisheries. Topics include local, regional, national, and international approaches to the management of marine fisheries. A social systems approach is used to analyze the biological, ecological, social, and economic aspects of the policy and management process. (Given at Beaufort.) 3 units. *Orbach*

**Environment 276. Marine Policy.** Formal study of policy and policy making concerning the coastal marine environment. History of specific marine-related organizations, legislation, and issues and their effects on local, regional, national, and international arenas. Topics explored through use of theoretical and methodological perspectives, including political science, sociology, and economics. (Given at Beaufort.) Consent of instructor required. C-L: Public Policy Studies 197. 3 units. *Orbach*

**Environment 291. Geological Oceanography.** The geology of ocean basins, including origin, bottom physiography, sediment distribution, and sedimentary processes. Not open to students who have taken Geology 296S. (Given at Beaufort.) C-L Geology 205. 3 units. *Staff*

**Environment 292L. Biological Oceanography.** Physical, chemical, and biological processes of the oceans, emphasizing special adaptation for life in the sea and factors controlling distribution and abundance of organisms. Laboratory emphasis. (Not open to undergraduates.) Prerequisite: introductory biology. 4 units (fall or spring); 6 units (summer). *Ramus or staff*

**Environment 293. Analysis of Ocean Ecosystems.** Examination of the ecosystem concept considering its history, utility, and heuristic value. Examination of ocean systems in the context of Odum's ecosystem concept. Structure and function of the earth's major ecosystems. Term paper required. (Not open to undergraduates.) Prerequisites: one year of biology and chemistry, or consent of instructor. 3 units. *Barber*

**Environment 295L. Marine Invertebrate Zoology.** Structure, function, and development of invertebrates collected from estuarine and marine habitats. Not open to students who have taken Biology or Zoology 274L. Not open to undergraduates. Prerequisite: introductory biology. 4 units (fall or spring); 6 units (summer). *Kirby-Smith*

**Environment 297L. Biology of Marine Invertebrates.** Systematic survey of the principal marine invertebrate taxa, with emphasis on structure, function, behavior, and ecology. Field trips and independent projects. (Given at Beaufort.) Prerequisite: introductory biology. C-L: Zoology 274L. 6 units. *Dimock (visiting summer faculty)*

**Environment 298.67. The Oxygen Paradox: An Essential Environmental Pollutant.** Oxygen is essential for the survival of almost all eukaryotes. However, it is becoming increasingly clear the oxygen-derived free radicals contribute to the process of aging, the promotion of cancer and several pathological disorders. Hence, oxygen is essential for life, but it carries the risk of destroying the very life for which it serves as the source of useful energy. Focus on the chemistry, biology/physiology and toxicology of oxygen, consisting of lectures, and readings and reports/discussions of recently-published research papers. 2 units. *Brouwer*

**Environment 299. Independent Studies and Projects.** Directed readings or research at the graduate level to meet the needs of individual students. Consent of instructor required. Units to be arranged. *Staff*

**Environment 393. Professional Writing.** Techniques in writing grant proposals, technical reports, and environmental impact statements. (Given at Beaufort.) 2 units. *Staff*

**Environment 398.02. Seminar** intended to assist students in the production and presentation of their master's projects and in the development of professional skills related to coastal environmental manage-



ment. Students present the results of their master's projects in a simulated professional forum; engage in a variety of written, verbal, and problem-solving exercises concerning coastal environmental issues; and discuss professional skills such as proposal writing, budgeting and fiscal planning, and mediation and consensus-building. 1 unit. Pass/fail. *Orbach*

**Environment 399. Master's Project.** An applied study of a forestry or environmental management problem or a theoretical research effort. A seminar presentation of the objectives, methodology, and preliminary findings is required. A written (or other medium) report at the conclusion of the project is also required. Undertaken with the guidance of the student's adviser. Consent of instructor required. 4 to 6 units, to be arranged. Variable credit. *Staff*

**Geology 201L. Physical Processes in Coastal Environments.** Prerequisites: Mathematics 31 and 32. See C-L: Environment 222. 3 units. *Howd*

**Geology 202. Beach and Island Geological Processes.** Processes affecting evolution of beaches and barrier islands with emphasis on the effect of constructions. Not open to students who have taken Geology 196. (Given at Beaufort on three weekends.) 2 units. *Pilkey*

**Geology 204. Advanced Topics in Nearshore Processes.** (Given at Beaufort.) Prerequisite: Environment 290, Mathematics 111 or 114, or consent of instructor. See C-L: Environment 268. 3 units. *Howd*

**Geology 205. Geological Oceanography.** The geology of ocean basins, including origin, bottom physiography, sediment distribution, and sedimentary processes. Not open to students who have taken Geology 206S. C-L: Environment 291. 3 units. *Staff*

**Geology 222L. Statistics and Data Analysis in Earth and Ocean Science.** (Given at Beaufort.) Prerequisites: Mathematics 31 and 32, Statistics 110 or 112, or consent of instructor. See C-L: Environment 252L. 4 units. *Howd*

**Geology 371, 372. Advanced Topics in Geology.** To meet the individual needs of graduate students for independent study in various environmental sedimentary fields. 1 to 3 units. *Staff*

**Zoology 203L. Marine Ecology.** Prerequisites: none; suggested—introductory ecology, invertebrate zoology, or marine botany. See C-L: Environment 219L. Four units (fall and spring); 6 units (summer). Variable credit. *Staff*

**Zoology 213L. Behavioral Ecology.** Prerequisite: introductory biology. See C-L: Environment 213L. 6 units. *Rubenstein (visiting summer faculty)*

**Zoology 274L. Biology of Marine Invertebrates.** Systematic survey of the principal marine invertebrate taxa, with emphasis on structure, function, behavior and ecology. Field trips and independent projects. Not open to undergraduates. (Given at Beaufort.) Prerequisite: introductory biology. C-L: Environment 297L. 6 units. *Dimock (visiting summer faculty)*

**Zoology 295S.08. Marine Animal Navigation.** Orientation to visual, chemical, or mechanical cues to examine aspects of the cues used for navigation, behavior involved, functional significance, and experimental design. 2 units. *Forward*

**Zoology 295S.26. Ecology of Chemical Signals.** Pheromone communication, predator-prey interactions, chemical warfare, resource location. An experimental and mechanistic study of chemically mediated behaviors central to marine ecology. 2 units. *Rittschof*

**Zoology 295S.54. Alteration of Estuarine Ecosystems.** Evaluation and analysis of the hypothesis that pollution, watershed modification, and fishing have changed estuarine ecosystems. The class will gather, analyze, and interpret scientific, economic, and anecdotal information to determine whether changes have occurred. The students will produce a report, with each student being responsible for a chapter. A particular focus is to determine if conventional fisheries observations and water quality data are relevant for predicting the future integrity of estuarine ecosystems. 2 units. *Barber*

**Zoology 353, 354. Research.** To be carried on under the direction of the appropriate staff members. Hours and credit to be arranged. *Staff*

**Zoology 360, 361. Tutorials.** An approved academic exercise, such as writing an essay or learning a research skill, carried out under the direction of the appropriate staff members. Hours and credit to be arranged. *Staff*

## **COURSES CURRENTLY UNSCHEDULED**

Biochemistry 245L. Macromolecules, Ecology, and Evolution

Biochemistry 276. Comparative and Evolutionary Biochemistry

Cell Biology 235, 235L. Advanced Research Training in Marine Molecular Biology and Biotechnology

Environment 294L. Marine Communities

## Mathematics

Professor Harer, *Chair* (138 Physics); Professor Schoen, *Director of Graduate Studies* (131 Physics); Professors Allard, Beale, Bryant, Hain, Harer, Lawler, Morrison, Pardon, Reed, Rose, Schaeffer, Stern, Trangenstein, Venakides, and Weisfeld; Associate Professors Bertozzi, Burdick, Hodel, Kitchen, Kraines, Layton, Moore, Saper, Schoen, Scoville, Smith, and Zhou; Assistant Professors Yang and Zheng; Research Assistant Professor Reed; Adjunct Professors Chandra and Shearer

Graduate work in the Department of Mathematics is offered leading to the A.M. and Ph.D. degrees. Admission to these programs is based on the applicant's undergraduate academic record, level of preparation for graduate study, the Graduate Record Examination, and letters of recommendation.

All A.M. and Ph.D. candidates are required to pass a qualifying examination after completing their first year of graduate study. The A.M. degree with a major in mathematics is awarded upon completion of 30 units of graded course work and passing the qualifying examination. A thesis may be substituted for 6 units of course work only under special circumstances.

The department offers research training in both pure and applied mathematics. Major areas of research specialization include analysis, algebraic and differential geometry, fluid mechanics, mathematical biology, mathematical physics, partial differential equations, probability theory, and topology. Interdisciplinary programs with connections to the department include the Center for Hydrologic Science, the Center for Mathematics and Computation in the Life Sciences and Medicine, and the Center for Nonlinear Studies.

Soon after the student who is pursuing a Ph.D. degree passes the qualifying examination, the director of graduate studies appoints a committee of two graduate faculty members who determine the conditions to be met by the student before he or she takes the preliminary examination. Normally, this committee forms the nucleus of the student's advisory committee. The conditions may include a reading knowledge of one or more foreign languages appropriate to the student's intended area of specialization, an appropriate level of computer programming proficiency, or specific course work.

Candidacy for the Ph.D. is established by passing an oral preliminary examination. The preliminary examination is normally taken during the third year. The preliminary examination is conducted by a committee selected by the rules of the Graduate School and the department. The examination can, at the student's option, consist of questions based either on the student's course work at Duke or on the specific area of research plus a minor subject selected by the student.

After admission to candidacy, the Ph.D. degree is awarded on the basis of the student's scholarly ability as demonstrated by the dissertation and its defense. The dissertation is the most important requirement in the award of the Ph.D. degree.

### For Seniors and Graduates

**200. Introduction to Algebraic Structures I.** Laws of composition, groups, rings; isomorphism theorems; axiomatic treatment of natural numbers; polynomial rings; division and Euclidean algorithms. Not open to students who have had Mathematics 121. Prerequisite: Mathematics 104 or equivalent. 3 units. *Staff*

**201. Introduction to Algebraic Structures II.** Vector spaces, matrices and linear transformations, fields, extensions of fields, construction of real numbers. Prerequisites: Mathematics 200, or Mathematics 121 and consent of instructor. 3 units. *Staff*

**203. Basic Analysis I.** Topology of  $R^n$ , continuous functions, uniform convergence, compactness, infinite series, theory of differentiation, and integration. Not open to students who have had Mathematics 139. Prerequisite: Mathematics 104. 3 units. *Staff*



**204. Basic Analysis II.** Inverse and implicit function theorems, differential forms, integrals on surfaces, Stokes' theorem. Not open to students who have had Mathematics 140. Prerequisites: Mathematics 203, or Mathematics 139 and consent of instructor. 3 units. *Staff*

**205. Topology.** Elementary topology, surfaces, covering spaces, Euler characteristic, fundamental group, homology theory, exact sequences. Prerequisite: Mathematics 104. 3 units. *Staff*

**206. Differential Geometry.** Geometry of curves and surfaces, the Serret-Frenet frame of a space curve, the Gauss curvature, Cadazzi-Mainardi equations, the Gauss-Bonnet formula. Prerequisite: Mathematics 104. 3 units. *Staff*

**211. Mathematical Methods in Physics and Engineering I.** Heat and wave equations, initial and boundary value problems, Fourier series, Fourier transforms, potential theory. Not open to students who have had Mathematics 133 or 230. Prerequisite: Mathematics 114 or equivalent. 3 units. *Staff*

**212. Mathematical Methods in Physics and Engineering II.** Green's functions, partial differential equations in several space dimensions. Complex variables, analytic functions, Cauchy's theorem, residues, contour integrals. Other topics may include method of characteristics, perturbation theory, calculus of variations, or stability of equilibria. Not open to students who have taken the former Mathematics 231. Prerequisite: Mathematics 114, 133, or 211. 3 units. *Staff*

**216. Applied Stochastic Processes.** An introduction to stochastic processes without measure theory. Topics selected from: Markov chains in discrete and continuous time, queueing theory, branching processes, martingales, Brownian motion, stochastic calculus. Not open to students who have taken Mathematics 240. Prerequisite: Mathematics 135 or equivalent. C-L: Statistics 253. 3 units. *Staff*

**217. Linear Models.** Not open to students who have taken the former Mathematics 241. Prerequisites: Mathematics 104 and Statistics 113 or 210. See C-L: Statistics 244. 3 units. *Staff*

**218. Introduction to Multivariate Statistics.** Not open to students who have taken the former Mathematics 242. Prerequisite: Statistics 244 or equivalent. See C-L: Statistics 245. 3 units. *Burdick*

**221. Numerical Analysis.** Prerequisites: knowledge of an algorithmic programming language, intermediate calculus including some differential equations, and Mathematics 104. See C-L: Computer Science 250; also C-L: Statistics 273. 3 units. *Greenside or Rose*

**222. Numerical Methods for Partial Differential Equations.** Prerequisite: Computer Science 221 or 250. See C-L: Computer Science 252. 3 units. *Greenside or Rose*

**223. Numerical Linear Algebra.** Prerequisite: Computer Science 221 or 250 or equivalent. See C-L: Computer Science 254. 3 units. *Rose or Sun*

**226. Topics in Numerical Analysis.** Numerical solution of ordinary or partial differential equations, unconstrained and constrained nonlinear optimization, finite element methods, computational methods for hyperbolic conservation laws. Prerequisite: Mathematics 221 or consent of instructor. 3 units. *Staff*

**229. Mathematical Modeling.** Formulation and analysis of mathematical models in science and engineering. Emphasis on case studies; may include individual or team research projects. 3 units. *Staff*



**231. Ordinary Differential Equations.** Existence and uniqueness theorems for nonlinear systems, well-posedness, two-point boundary value problems, phase plane diagrams, stability, dynamical systems, and strange attractors. Not open to students who have taken the former Mathematics 296. Prerequisites: Mathematics 104, 111 or 131, and 203 or 139. 3 units. *Staff*

**232. Partial Differential Equations I.** Fundamental solutions of linear partial differential equations, hyperbolic equations, characteristics, Cauchy-Kowalevski theorem, propagation of singularities. Not open to students who have taken the former Mathematics 297. Prerequisite: Mathematics 204 or equivalent. 3 units. *Staff*

**233. Asymptotic and Perturbation Methods.** Asymptotic solution of linear and nonlinear ordinary and partial differential equations. Asymptotic evaluation of integrals. Singular perturbation. Boundary layer theory. Multiple scale analysis. Prerequisite: Mathematics 114 or equivalent. 3 units. *Staff*

**238, 239. Topics in Applied Mathematics.** Conceptual basis of applied mathematics, graph theory, game theory, mathematical programming, numerical analysis, or problems drawn from industry or from academic science or engineering. Prerequisites: Mathematics 103 and 104 or equivalents. 3 units each. *Staff*

**241. Real Analysis I.** Measures; Lebesgue integral;  $L^p$  spaces; Daniell integral, differentiation theory, product measures. Not open to students who have taken the former Mathematics 281. Prerequisite: Mathematics 204 or equivalent. 3 units. *Staff*

**242. Real Analysis II.** Metric spaces, fixed point theorems, Baire category theorem, Banach spaces, fundamental theorems of functional analysis, Fourier transform. Not open to students who have taken the former Mathematics 282. Prerequisite: Mathematics 241 or equivalent. 3 units. *Staff*

**245. Complex Analysis.** Complex calculus, conformal mapping, Riemann mapping theorem, Riemann surfaces. Not open to students who have taken Mathematics 285. Prerequisite: Mathematics 204 or equivalent. 3 units. *Staff*

**248. Topics in Analysis.** Harmonic analysis, dynamical systems, geometric measure theory, or calculus of variations. Prerequisites: Mathematics 241 and 245 or equivalents. 3 units. *Staff*

**249. Topics in Functional Analysis.** Spectral analysis, operator algebras, nonlinear functional analysis, or structure theory of Banach spaces. Prerequisite: Mathematics 242 or equivalent. 3 units. *Staff*

**251. Groups, Rings, and Fields.** Groups including nilpotent and solvable groups,  $p$ -groups and Sylow theorems; rings and modules including classification of modules over a PID and applications to linear algebra; fields including extensions and Galois theory. Not open to students who have taken Mathematics 260. Prerequisite: Mathematics 201 or equivalent. 3 units. *Staff*

**252. Commutative Algebra.** Extension and contraction of ideals, modules of fractions, primary decomposition, integral dependence, chain conditions, affine algebraic varieties, Dedekind domains, completions. Not open to students who have taken the former Mathematics 261. Prerequisite: Mathematics 251 or equivalent. 3 units. *Staff*

**254. Topics in Algebra.** Algebraic number theory, algebraic  $K$ -theory, homological algebra, or other topics. Prerequisite: Mathematics 251. 3 units. *Staff*

**257. Mathematical Logic.** First-order logic, completeness theorem, compactness theorem, introduction to recursive functions, incompleteness theorem. Not open to students who have taken Mathematics 250. Prerequisite: Mathematics 187 or 200 or equivalent. 3 units. *Staff*

**261. Algebraic Topology I.** Fundamental group and covering spaces, singular and cellular homology, Eilenberg-Steenrod axioms of homology, Euler characteristic, classification of surfaces, singular and cellular cohomology. Not open to students who have taken Mathematics 271. Prerequisites: Mathematics 200 and 205 or consent of instructor. 3 units. *Staff*

**262. Algebraic Topology II.** Universal coefficient theorems, Kunneth theorem, cup and cap products, Poincaré duality, plus topics selected from: higher homotopy groups, obstruction theory, Hurewicz and Whitehead theorems, and characteristic classes. Prerequisite: Mathematics 261 or consent of instructor. 3 units. *Staff*

**263, 264. Topics in Topology.** Algebraic, geometric, or differential topology. Consent of instructor required. 3 units each. *Staff*

**267. Differential Geometry.** Differentiable manifolds, fiber bundles, connections, curvature, characteristic classes, Riemannian geometry including submanifolds and variations of the length integral, complex manifolds, homogeneous spaces. Not open to students who have taken Mathematics 275. Prerequisites: Mathematics 204 and 251 or equivalents. 3 units. *Staff*

**268. Topics in Differential Geometry.** Lie groups and related topics, Hodge theory, index theory, minimal surfaces, Yang-Mills fields, exterior differential systems, several complex variables. Prerequisite: Mathematics 267 or consent of instructor. 3 units. *Staff*

**273. Algebraic Geometry.** Local theory: affine varieties, algebraic and topological theory of singularities. Global theory over the complex numbers: Riemann surfaces, Jacobians, Kähler manifolds, Hodge theory, theorems of Lefschetz and Kodaira. Prerequisite: Mathematics 252 or equivalent. 3 units. *Staff*

**277. Topics in Algebraic Geometry.** Projective varieties and the theory of extremal rays, classification of surfaces and higher-dimensional varieties, variation of Hodge structure and moduli problems, schemes and arithmetic varieties, or other advanced topics. Prerequisite: Mathematics 273 or consent of instructor. 3 units. *Staff*

**278. Topics in Complex Analysis.** Geometric function theory, function algebras, several complex variables, uniformization, or analytic number theory. Prerequisite: Mathematics 245 or equivalent. 3 units. *Staff*

**279. Topics in Mathematical Physics.** Topics will be selected from: critical phenomena and statistical mechanics; mathematical aspects of quantum field theory, string and superstring theories, or other topics. 3 units. *Staff*

**281. Partial Differential Equations II.** Linear wave motion, dispersion, stationary phase, foundations of continuum mechanics, characteristics, linear hyperbolic systems, and nonlinear conservation laws. Not open to students who have taken the former Mathematics 298. Prerequisite: Mathematics 232 or equivalent. 3 units. *Staff*

**282. Partial Differential Equations III.** Fourier transforms, distributions, elliptic equations, singular integrals, layer potentials, Sobolev spaces, regularity of elliptic boundary value problems. Prerequisites: Mathematics 232 and 241 or equivalent. 3 units. *Staff*

**283, 284. Topics in Partial Differential Equations.** Hyperbolic conservation laws, pseudo-differential operators, variational inequalities, theoretical continuum mechanics. Prerequisite: Mathematics 281 or equivalent. 3 units each. *Staff*

**287. Probability.** Random variables, independence, expectations, laws of large numbers, central limit theorem, Markoff chains. Not open to students who have taken Mathematics 290. Prerequisite: Mathematics 241 or equivalent. C-L: Statistics 207. 3 units. *Staff*

**288. Topics in Probability Theory.** Brownian motion, diffusion processes, random walks, and applications to differential equations and mathematical physics. Prerequisite: Mathematics 287 or consent of instructor. C-L: Statistics 297. 3 units. *Staff*

**295, 296. Special Topics.** 3 units each. *Staff*

**297, 298. Special Readings.** 3 units each. *Staff*

**348. Current Research in Analysis.** Not open to students who have taken Mathematics 388, 389. 3 units. *Staff*

**358. Current Research in Algebra.** Not open to students who have taken Mathematics 368-369. 3 units. *Staff*

**368. Current Research in Topology.** Not open to students who have taken Mathematics 378-379. 3 units. *Staff*

**369. Current Research in Differential Geometry.** 3 units. *Staff*

**378. Current Research in Algebraic Geometry.** 3 units. *Staff*

**379. Current Research in Mathematical Physics.** Not open to students who have taken Mathematics 387. 3 units. *Staff*

**388. Current Research in Differential Equations.** 3 units. *Staff*

**389. Current Research in Applied Mathematics.** 3 units. *Staff*

## Medical Historian Training Program

Peter English, M.D., *Director*

The Medical Historian Training Program is conducted under the auspices of the School of Medicine and the Graduate School. The M.D.-Ph.D. program requires a minimum of six years of graduate and medical study, and the M.D.-A.M. four or five years, depending on the use of summer terms. The M.D.-Ph.D. program is intended for those students who know that their major career effort will be in teaching and other scholarly activities in the history of medicine (not necessarily to the total exclusion of clinical medicine). The M.D.-A.M., on the other hand, is appropriate for those who are undecided, but who wish to acquire a firm foundation for future study. In both programs the first two years and the last year will be spent in the medical school. All requirements for the Ph.D. and the A.M. must be completed before the final year of the M.D. program.

**Application and Admission Procedures.** Applicants must meet the requirements for admission to the School of Medicine and the Graduate School in the Department of History including the MCAT and GRE exams. Those candidates holding the M.D. degree will be considered for the Ph.D. and the A.M. degrees. Candidates who have completed two years of medical school will also be considered for either degree.

Applicants should complete and submit an application to the Graduate School for admission to the Department of History.

Additional information may be obtained by writing to Dr. Peter English, Box 3675 Duke University Medical Center, Duke University Durham, North Carolina 27710.

## Medical Scientist Training Program

Salvatore V. Pizzo, M.D., Ph.D., *Director*

The Medical Scientist Training Program, conducted under the auspices of the Graduate School and the School of Medicine, is designed for students with a strong background in science who are motivated toward a career in the medical sciences and academic medicine. It provides an opportunity to integrate graduate education in one



of the sciences basic to medicine with the clinical curriculum of the School of Medicine. The program usually requires six to seven years of study and leads to both the M.D. and Ph.D. degrees. Although the special emphasis of this program is on basic medical science, the trainees, because of their education in clinical medicine, have a remarkable range of career opportunities open to them. Graduates of this program generally follow one of two broad paths. Some directly pursue careers in teaching and research in one of the basic medical sciences, while maintaining strong ties with clinical science as a result of their combined training; others enter residency programs before pursuing investigative and teaching careers in clinical medicine, carrying with them strong academic backgrounds in the basic sciences.

**Eligibility.** Applicants must meet the admission requirements of both the Graduate School as a candidate for the Ph.D. degree and the School of Medicine as a candidate for the M.D. degree. Most candidates apply for admission to the first year of the program, but applications are sometimes accepted from students who are enrolled in appropriate stages of their curriculum in the Graduate School or School of Medicine of Duke University. In addition to the minimum requirements for acceptance in the Graduate School and the School of Medicine, advanced course work in science and mathematics as well as prior research experience count heavily in the selection of candidates.

**Financial Support.** Students admitted to the first year of the program can receive a traineeship award, consisting of a stipend and full tuition allowance, provided by a grant from the National Institutes of Health. The present annual stipend is \$13,000. Current policy of the National Institutes of Health limits the duration of the traineeship to six years, but the years need not be consecutive; this permits curricula which take more than six years. For those students requiring more than six years, the department and/or preceptor of the student provide support for additional years in training.

This traineeship, created by the National Research Service Award Act of 1974 (PL 93-348) provides (as do all research training awards under this act) for certain alternate service or payback requirements in the event that a research career is not pursued. Support by the NIH under the National Research Service Award Act requires the recipient to be a citizen or resident of the United States.

**The Training Program.** This program has been designed to offer trainees latitude in the selection of course material. Basic requirements are two academic years composed of the first basic science year and the second clinical science year of the curriculum for medical students at Duke University. Following completion of the second year, the trainee enters the graduate program to complete the requirements for the Ph.D. degree. A final academic year of elective clinical study is necessary to complete the requirements for the M.D. degree. Both degrees are awarded at the completion of this sequence.

Additional information may be obtained by writing Professor Salvatore V. Pizzo, Medical Scientist Training Program, Department of Pathology, Box 3712 Duke University Medical Center, Durham, North Carolina 27710.

## Program in Medieval and Renaissance Studies

Professor Aers, *Chair*; Professor Solterer, *Director of Graduate Studies* (217B Languages Center)

The graduate Program in Medieval and Renaissance Studies is an interdisciplinary program administered by the Duke University Center for Medieval and Renaissance Studies. Some fifty faculty in ten different degree-granting departments participate in the medieval-Renaissance program. Students may earn a Certificate of Graduate Studies by completing two core course requirements in addition to a dissertation focused on a medieval or Renaissance subject. In consultation with the director of graduate studies, students in the program select courses in art, history, music, philosophy, religion, language, and literature (classical studies, English, German, and Romance languages).

For descriptions of the individual courses see the listings under the specified department.

**200S. Seminar in Medieval and Renaissance Studies.** Topics in the historiography and interpretation of medieval and Renaissance culture. Topics will vary from year to year. 3 units. *Staff*

**300. Research Colloquium in Medieval and Renaissance Studies.** Credit grading only. 3 units. *Staff*

**301. Medieval and Renaissance Studies.** Seminar on the material bases (archival documents, legal records, court records, manuscripts, material artifacts, and the like) for the study of the Middle Ages. Topics addressed include origins and accessibility, as well as questions of method and historiography. Topics vary. Consent of instructor required. 3 units. *Shatzmiller*

#### DEPARTMENT OF ART AND ART HISTORY

216. The Art of the Counter-Reformation. *Rice*

233S. Topics in Early Christian and Byzantine Art. *Wharton*

236S. Topics in Romanesque and Gothic Art and Architecture. *Bruzeliuss or Tronzo*

243S. Topics in Netherlandish and German Art. *Van Miegroet*

247S. Topics in Italian Renaissance Art. *Rice*

260S. Topics in Italian Baroque Art. *Rice*

#### DEPARTMENT OF CLASSICAL STUDIES

221. Medieval Latin. *Newton*

312. Seminar in Latin Paleography. *Newton*

#### DEPARTMENT OF ENGLISH

208. History of the English Language. *Butters or Tetel*

212. Middle English Literature: 1100 to 1500. *Aers or Beckwith*

213, 214. Chaucer. *Aers or Beckwith*

221. Renaissance Prose and Poetry: 1500 to 1660. *DeNeef, Fish, Goldberg, or Randall*

225. Renaissance Drama: 1500 to 1642. *Goldberg or Randall*

310. Studies in Old English Literature. *Staff*

312. Studies in Middle English Literature. *Aers or Beckwith*

315. Studies in Chaucer. *Aers or Beckwith*

321. Studies in Renaissance Literature. *DeNeef, Fish, Goldberg, Porter, or Randall*

324. Studies in Shakespeare. *Porter*

329. Studies in Milton. *DeNeef, Fish, or Goldberg*

#### DEPARTMENT OF GERMANIC LANGUAGES AND LITERATURE

201. Introduction to Medieval German. *Rasmussen*

202S. Medieval Seminar. *Rasmussen*

203S. Sex, Gender, and Love in Medieval German Literature. *Rasmussen*

210S. Renaissance and Reformation. *Borchardt*

215S. German Baroque Literature. *Borchardt*

260. History of the German Language. *Rasmussen*

#### DEPARTMENT OF HISTORY

221. Special Topics in the History of Europe, 1200-1700. *Staff*

222A. Problems in the Intellectual History of the European Renaissance and Reformation. *Witt*

222B. Florence: Renaissance City. *Witt*

236A. Topics in the History of Monasticism. *Peyroux*

237S. Europe in the Early Middle Ages. *Staff*

238S. Europe in the High Middle Ages. *Staff*

251A. Topics in Intellectual History of Europe, 1250-1450. *Witt*

251B. Topics in Intellectual History of Europe, 1450-1650. *Witt*

267S. England in the Sixteenth Century. *Herrup*

268S. England in the Seventeenth Century. *Herrup*

328S. War and Society in Early Modern Europe. *Neuschel*

#### DEPARTMENT OF MUSIC

211. Notation. *Williams*

222. Music in the Middle Ages. *Brothers*

223. Music in the Renaissance. *Brothers or Silbiger*

228-229. Collegium Musicum. *Brothers and Meniker*

317S. Seminar in the History of Music. (Topics vary.) *Staff*

## DEPARTMENT OF PHILOSOPHY

- 218S. Medieval Philosophy. *Mahoney*
- 219S. Late Medieval and Renaissance Philosophy. *Mahoney*

## DEPARTMENT OF RELIGION

- 206. The Christian Mystical Tradition in the Medieval Centuries. *Keefe*
- 219. Augustine. *Clark*
- 236. Luther and the Reformation in Germany. *Steinmetz*
- 250. Women in the Medieval Church. *Keefe*
- 272. The Early Medieval Church. *Keefe*
- 337. Theology of St. Thomas Aquinas. *Steinmetz*
- 338. Calvin and the Reformed Tradition. *Steinmetz*
- 339. The Radical Reformation. *Steinmetz*

## DEPARTMENT OF ROMANCE STUDIES

### French

- 211. History of the French Language. *Thomas*
- 240. Medieval Narrative. *Solterer*
- 248. French Literature of the Seventeenth Century. *Farrell*
- 325. Topics in Renaissance Prose. *Tetel*
- 326. Topics in Renaissance Poetry. *Tetel*
- 349. The Epistolary Genre. *Longino*
- 391, 392. French Seminar (medieval and Renaissance topics). *Tetel and staff*

### Italian

- 240. Seminar in Medieval and Renaissance Studies. *Finucci*
- 284, 285. Dante. *Caserta*

### Spanish

- 210. History of the Spanish Language. *Garci-Gómez*
- 341. Colonial Prose of Spanish America. *Ross*
- 342. Colonial Poetry and Theater of Spanish America. *Ross*
- 351. The Origin of Spanish Prose Fiction. *Staff*
- 353. Cervantes. *Staff*
- 358. Spanish Lyric Poetry before 1700. *Staff*
- 391, 392. Hispanic Seminar (medieval and Renaissance topics). *Staff*

## COURSES CURRENTLY UNSCHEDULED

- Classical Studies 327. Seminar in Byzantine History
- English 207A. Introduction to Old English
- English 207B. Old English Literature
- English 383. Studies in Textual Criticism
- Music 341S. History of Music Theory to Rameau
- Music 351S. Studies in Musical Iconography
- Music 361S. Musical Organology
- Religion 241. Problems in Reformation Theology
- Religion 251. Counter-Reformation and Development of Catholic Dogma
- Religion 334. Theology and Reform in the Later Middle Ages
- Religion 344. Zwingli and the Origins of Reformed Theology

## Microbiology

Professor Keene, *Chair* (414A Jones); Associate Professor Pickup, *Director of Graduate Studies* (421 Jones); Professors Bastia, Bolognesi, Cullen, Endow, Joklik, Linney, and Nevins; Associate Professors Kreuzer, Linney, Mitchell, and White; Assistant Professors Garcia-Blanco, Hanna, Horowitz, McCusker, and Wharton; Professors Emeriti Osterhout, Wheat, and Willett; Associate Research Professors Burdett, Harrell, and Miller

The Department of Microbiology offers a broadly-based graduate program leading to the Ph.D. degree. It also participates in interdepartmental programs such as the University Program in Genetics, the Program in Cell and Molecular Biology, and the Medical Scientist Training Program. The department's graduate program is designed to provide students with a strong scientific base in the principles and techniques of contemporary bacterial and animal cell biology.

The research interests of the faculty provide numerous and diverse areas for training in prokaryotic and eukaryotic molecular cell biology, molecular genetics and



virology, as well as in broad multidisciplinary areas like the nature of protein nucleic acid interactions, the nature of the molecular controls of gene expression, molecular virology, and the function of oncogenes and antioncogenes.

Undergraduate preparation in the biological and physical sciences and in biochemistry is required. A brochure more fully describing the Ph.D. degree program, prerequisites for admission, and research in the department may be obtained by writing the Director of Graduate Studies, Box 3020, Duke University Medical Center, Durham, North Carolina 27710.

**214. Fundamentals of Electron Microscopy.** Introduction to the basics of transmission electron microscopy. Specimen preparation techniques include: grid preparation, negative staining, metal shadowing, nucleic acid spreading, embedding, and thin sectioning. Students gain experience in the use of the ultramicrotome and electron microscope by working on their own projects. Additional techniques included are ultracyotomy immunoelectron microscopy, freeze-fracture, scanning electron microscopy, and X-ray spectroscopy. C-L: Immunology 214. 3 units. *Miller*

**221. Medical Microbiology.** An intensive study of common bacteria, viruses, fungi, and parasites which cause disease in humans. The didactic portion of the course focuses on the nature and biological properties of microorganisms causing disease, the manner of their multiplication, and their interaction with the entire host as well as specific organs and cells. 4 units. *Mitchell and staff*

**252. General Virology and Viral Oncology.** The first half of the course will be devoted to a discussion of the structure and replication of mammalian and bacterial viruses. The second half deals specifically with retroviruses and transformation, which are discussed in terms of the virus-cell interaction, the relationship of viruses and oncogenes to neoplasia, and the role of the immunological response in retrovirus infections. Consent of instructor required. C-L: Immunology 252. 4 units. *Keene and staff*

**259. Molecular Biology I: Proteins and Enzymes.** Prerequisites: biochemistry, organic chemistry, and physical chemistry. See C-L: Biochemistry 259; also C-L: Cell Biology 259, Immunology 259, and Molecular Biophysics 259. 3 units. *Fierke and staff*

**268. Molecular Biology II: Nucleic Acids.** Prerequisites: introductory biochemistry and equivalents of Biochemistry 259 and Cell and Molecular Biology 247, 277, and 278. See C-L: Biochemistry 268; also C-L: Cell Biology 268, Immunology 268, and The University Program in Genetics 268. 4 units. *Steege and staff*

**291. Comprehensive Immunology.** See C-L: Immunology 291. 4 units. *Krangel and staff*

**296. Colloquium: Developmental Biology.** Lectures, seminars, and discussion of current topics in development biology. Rotating topics include mechanisms of axis determination, signaling pathways in development, cytoplasmic changes during morphogenesis, mechanisms of cell lineage restriction, and transcriptional regulation circuitry. Prerequisites: basic course in development and consent of instructor. 3 units. *Keihart, Linney, and McClay*

## **For Graduates**

**325. Medical Mycology.** Comprehensive lecture and laboratory coverage of all the fungi pathogenic for humans. Practical aspects as well as future trends in the mycology, immunology, diagnosis, pathogenesis, and epidemiology of each mycotic agent will be explored. There will be several invited lecturers, each an internationally recognized scientist, discussing his or her particular area of mycological expertise and current research. Consent of instructor required. 4 units. *Mitchell*

**331. Microbiology Colloquium.** Current topics in microbiology with seminars presented by students, faculty, and outside speakers. Required course for all students specializing in microbiology. 1 unit. *White*

#### **COURSES CURRENTLY UNSCHEDULED**

**282. Molecular Microbiology**

**304. Molecular Membrane Biology**

**323. Topics in Cell and Molecular Biology**

**324. Topics in Molecular Genetics**

### **The University Program in Molecular Biophysics**

Professor D. Richardson, *Director* (biochemistry); Associate Professor White, *Director of Graduate Studies* (microbiology); Professors Erickson (cell biology), Hammes (biochemistry); McGown (chemistry), McIntosh (cell biology), Palmer (chemistry), Reedy (cell biology), J. Richardson (biochemistry), Shaw (chemistry), Simon (neurobiology), and Spicer (biochemistry); Associate Professors Corless (cell biology), Henkens (chemistry), and Hsieh (biochemistry); Assistant Professors Beese (biochemistry), Fierke (biochemistry), Hellinga (biochemistry), Oas (biochemistry), Toone (chemistry), and Van Dongen (pharmacology)

The program in structural molecular biophysics at Duke centers on those research endeavors that use physical measurements to study biological macromolecules and their interactions, where the details of molecular structure are critical to understanding the biological problem in question. The focus is on understanding molecular structure/function at atomic resolution; the breadth extends to detecting molecular events and describing structural relationships in a chemically meaningful way, and relating atomic-level with higher-order structures. There is a commonality in the intellectual approaches and experimental techniques. Research problems addressed within the University Program in Molecular Biophysics include: 3-D structure determination by crystallography and NMR; molecular assemblies studied by various diffraction, spectroscopy, and microscopy techniques; protein folding; molecular modeling and design studies and their direct experimental testing; and functional studies in biochemistry, genetic mechanisms, drug interactions, membrane systems, and so on, for which the details of molecular geometry are central to interpreting the experiments.

Participating students may receive a certificate from the Molecular Biophysics Program in addition to the doctoral degree from their home department. Requirements for the certificate ordinarily will include the core courses (Proteins and Enzymes, Physical Biochemistry I, Physical Biochemistry II, Structure of Biological Macromolecules, Membrane Biophysics), lab rotations with molecular biophysics faculty, giving and attending seminars, and an appropriate thesis topic and committee. However, the curriculum can be tailored for students with special interests and backgrounds. For further information about the University Program in Molecular Biophysics, contact the program office at Duke University, Box 3567 DUMC, Durham, North Carolina 27710.

**222. Structure of Biological Macromolecules.** See C-L: Biochemistry 222. 2 units. *Richardson*

**259. Molecular Biology I: Proteins and Enzymes.** Prerequisites: biochemistry, organic chemistry, and physical chemistry. See C-L: Biochemistry 259; also C-L: Cell Biology 259, Immunology 259, and Microbiology 259. 3 units. *Fierke and staff*

**291. Physical Biochemistry.** Prerequisites: undergraduate physical chemistry and one year of calculus. See C-L: Biochemistry 291. 3 units. *Oas and staff*



**292. Advanced Biophysical Chemistry.** Topics include X-ray crystallography, nuclear magnetic resonance, and molecular simulations; techniques (for example, Laue techniques for following enzyme reaction intermediates, NMR methods for measuring protein dynamics); applications (for example, NMR and protein folding, analysis of structure/function relationships in a particular protein or group of proteins). Prerequisite: Biochemistry 291 or Molecular Biophysics 291. 3 units. *Hellinga and staff*

**293. Membrane Biophysics.** Composition of biological membranes, structure/properties of membrane lipids and proteins (receptors, pores, channels, ion transport ATPases, membrane junctions), mechanical properties of membranes and bilayers, interaction of small molecules with membranes, ionic basis of membrane and action potentials, synaptic transmission. C-L: Cell Biology 293. 3 units. *McIntosh and staff*

**345, 346. Molecular Biophysics Seminar.** Required of all MBP students. 1 unit each. *Oas*

## Molecular Cancer Biology

Professor Means, *Acting Chair* (pharmacology); Associate Professor Casey (molecular cancer biology and biochemistry), *Director of Graduate Studies* (C303 LSRC); Professors Bennett (cell biology), Blackshear (medicine and biochemistry), Caron (cell biology), Dawson (immunology), Hannun (medicine and cell biology), Kaufman (medicine and biochemistry), Keene (microbiology), Lefkowitz (medicine and biochemistry), Linney (microbiology and pharmacology), Modrich (biochemistry), Nevins (Genetics), and Sheetz (cell biology); Associate Professors McDonnell (pharmacology) and Shenolikar (pharmacology); Assistant Professors Garcia-Blanco (molecular cancer biology), Garrett (molecular cancer biology), Horowitz (molecular cancer biology), Kornbluth (molecular cancer biology), Lew (molecular cancer biology), Pendergast (pharmacology), Peters (medicine and pharmacology), Swenson (molecular cancer biology), and Wang (pharmacology)

The Department of Molecular Cancer Biology facilitates graduate training in basic science aspects of cancer research. Specifically, program students receive training in areas of normal cell regulation including extracellular signals, receptor-mediated signal transduction, second messengers, protein kinases and phosphatases, transcriptional regulation and cell-cycle control. Aspects of cell-cell interaction and communication and the interaction of cells with the extracellular matrix are also examined. Finally, the program explores the consequences of oncogene activation and tumor-suppressor gene inactivation on such fundamental processes in tumor cells.

The graduate Program in Molecular Cancer Biology is an interdisciplinary program administered by the Department of Molecular Cancer Biology at Duke University Medical Center. Program faculty have primary graduate appointments within one of seven basic science medical center departments. In consultation with the director of graduate studies, students in the program select courses in cell biology, molecular biology, immunology, cancer biology, pharmacology, and developmental biology. For descriptions of the individual courses see the listings under specified departments.

**200. Cancer Biology.** A comprehensive course in basic and clinical aspects of cancer biology. Topics include a historical overview of cancer research, properties of cultured mammalian cells, cell transformation and tumorigenesis, oncogenes and tumor-suppressor genes, cell-cycle regulation, signal transduction, molecular carcinogenesis, cancer epidemiology, and basic science aspects of clinical oncology. This course is designed primarily for medical students and fellows. 4 units. *Staff*

**300. Special Topics in Cancer Biology.** 2 units. *Staff*

**301. Molecular Cancer Biology Seminar.** 1 unit. *Staff*



**417. Cellular Signaling.** See C-L: Cell Biology 417; also C-L: Biochemistry 417 and Pharmacology 417. 3 units. *Caron, Casey, Means and invited lecturers.*

**418. Molecular Mechanisms of Oncogenesis.** Lectures, oral presentations, and discussions on advanced topics and recent advances in the molecular biology of cancer. Particular emphasis on strategies to exploit this information in the design of intervention strategies to selectively block the growth of cancer cells. Prerequisite: Cell Biology 417. 2 units. *Wang and staff*

## **COURSES WITH MOLECULAR CANCER BIOLOGY CONTENT OFFERED BY PARTICIPATING DEPARTMENTS**

### **Cell Biology**

- 219. Molecular and Cellular Bases of Differentiation. *Counce and staff*
- 232. Extracellular Matrix and Cell Adhesion. *Bennett and Erickson*
- 251. Molecular Cell Biology. *Erickson and staff*
- 269. Advanced Cell Biology. *Nicklas and staff*

### **Biochemistry**

- 215. Genetic Mechanisms. *Webster and staff*
- 259. Molecular Biology I: Proteins and Enzymes. *Richardson and staff*
- 268. Molecular Biology II: Nucleic Acids. *Steege and staff*

### **Immunology**

- 244. Principles of Immunology. *Kostyu, McClay, and staff*

### **Microbiology**

- 252. General Virology and Viral Oncology. *Keene and staff*
- 310. Molecular Development. *Linney*

### **Pharmacology**

- 233. Essentials of Pharmacology. *Slotkin and staff*
- 254. Mammalian Toxicology. *Abou-Donia and staff*

## **Music**

Professor Todd, *Chair* (105 Mary Duke Biddle Music Building); Professor Silbiger, *Director of Graduate Studies* (067 Mary Duke Biddle Music Building); Professor Jaffe and Williams; Associate Professors Bartlet and Gilliam; Assistant Professors Brothers, Lindroth, and Moreno; Professor of the Practice Parkins; Adjunct Assistant Professor Druesedow; Lecturer Meintjes

The Department of Music offers graduate programs leading to the A.M. and Ph.D. degrees in composition and musicology, and the A.M. in performance practice.

Applicants for admission to all degree programs will normally have a broad liberal arts background as well as demonstrable musical competence. Those applying to the composition program should submit samples of their compositions with their applications; for the musicology program, applicants should include samples of their writing on musical topics. Upon acceptance to the university, by nomination of the graduate faculty in music, musicology students may also be admitted to the Program in Medieval and Renaissance Studies (see section on Medieval and Renaissance Studies in this bulletin). For the performance practice program, the department encourages applications from advanced musicians who have demonstrated an ability to conduct research about the performance of music in historical contexts. Applicants in performance practice should submit a recording of their work in the field as well as a sample of their writing.

For the Ph.D. degree in composition seventeen courses (54 units) are required; no more than four courses (16 units) may be accepted for transfer from another institution. Two courses should be taken in other departments. Students are expected to pass a qualifying examination (usually in the second year) and a preliminary examination (after completing course work, usually in the third year); before taking the preliminary examination they are asked to submit a portfolio of compositions. Students in compo-

sition must also demonstrate knowledge of one foreign language. The dissertation requirements consist of a large-scale composition and an article of publishable quality.

For the Ph.D. in musicology seventeen courses (54 units) are required; no more than four courses (16 units) may be accepted for transfer from another institution. Three courses should be taken in other departments. Students are expected to pass a qualifying examination (usually in the second year) and a preliminary examination (after completing course work, usually in the third year); in addition they must demonstrate knowledge of two foreign languages (one of these will normally be German). Within the framework of the musicology degree students may also pursue projects in ethnomusicology, music theory, or performance practice.

For the A.M. in performance practice eleven courses (33 units) are required. Students are expected to pass a qualifying examination (usually in the second year) and to give a Master's Recital (usually toward the end of the first year). They also must demonstrate knowledge of one foreign language.

A more detailed description of each degree program is available upon request from the director of graduate studies.

**201. Introduction to Musicology.** Methods of research on music and its history, including studies of musical and literary sources, iconography, performance practice, ethnomusicology, and historical analysis, with special attention to the interrelationships of these approaches. 3 units. *Bartlet or Druesedow*

**203. Proseminar in Performance Practice.** Critical methods in the study of historical performance practice, including the evaluation of evidence provided by musical and theoretical sources, archival and iconographic materials, instruments, and sound recordings. Current issues regarding the performance practice for music from the Middle Ages to the twentieth century. 3 units. *Silbiger*

**211, 212. Notation.** Development and changing function of musical notation from c. 900 to c. 1900, including plainchant notations, black notations, white notations, the invention of printing (particularly movable type and engraving), keyboard and lute tablatures, scores. 3 units each. *Brothers or Silbiger*

**213. Theories and Notation of Contemporary Music.** The diverse languages of contemporary music and their roots in the early twentieth century, with emphasis on the problems and continuity of musical language. Recent composers and their stylistic progenitors: for example, Ligeti, Bartók, and Berg; Carter, Schoenberg, Ives, and Copland; Crumb, Messiaen, and Webern; Cage, Varèse, Cowell, and Stockhausen. 3 units. *Jaffe or Lindroth*

**215. Music Analysis.** Historical, philosophical, and ideological issues raised by music analysis. Intensive study of harmony and voice leading in the works of major tonal composers, with emphasis on the analytic approach of Heinrich Schenker. 3 units. *Moreno or Todd*

**217. Selected Topics in Analysis.** An exploration of analytical approaches appropriate to a diversity of music, which may include settings of literary texts, pre-tonal music, and music in oral and vernacular traditions. Prerequisite: Music 215 or consent of instructor. 3 units. *Silbiger*

**218. Advanced Counterpoint.** Selected topics in modal or tonal contrapuntal practice with emphasis on music writing up to five parts. Consent of instructor required for students not registered for doctoral work in composition. 3 units. *Jaffe, Lindroth, or Moreno*

*Courses dealing with selected topics in the period concerned, at a level between simple surveys and advanced seminars:*

**222. Music in the Middle Ages.** Selected topics. C-L: Medieval and Renaissance Studies. 3 units. *Brothers*

**223. Music in the Renaissance.** Selected topics. C-L: Medieval and Renaissance Studies. 3 units. *Brothers or Silbiger*

**224. Music in the Baroque Era.** Selected topics. 3 units. *Silbiger*

**225. Music in the Classic Era.** Selected topics. 3 units. *Bartlet or Todd*

**226. Music in the Nineteenth Century.** Selected topics. 3 units. *Bartlet, Gilliam, or Todd*

**227. Music in the Twentieth Century.** Selected topics. 3 units. *Gilliam or Todd*

**228-229. Collegium Musicum.** An opportunity to study and perform vocal and instrumental music from the Middle Ages to the early romantic period. Weekly rehearsals and one or two concerts each semester. A written project required of all participants. Consent of instructor required for all except graduate students in music. C-L: Medieval and Renaissance Studies. 3 units. *Staff*

**228A-229A. Collegium Musicum.** Same as 228-229, but no project required and no credit awarded. C-L: Medieval and Renaissance Studies. No credit. *Staff*

**236. Nineteenth-Century Piano Music.** Beethoven, Schubert, Weber, Mendelssohn, Schumann, Chopin, Liszt, and Brahms. The arts of improvisation and transcription, the keyboard virtuoso, the character piece, and the conflict between romantic content and form. 3 units. *Todd*

**295S. Composition Seminar.** Selected topics in composition. 3 units. *Jaffe or Lindroth*

**296S. Analysis of Contemporary Music.** Structures, expressive intentions, and functions since 1914. Contemporary orchestral music, American music, European music, popular media, musical tradition, and contemporary composers. Analysis of works performed in the department's Encounters Series with occasional guest composers present. 3 units. *Jaffe or Lindroth*

**297, 298, 299. Composition.** Weekly independent study sessions at an advanced level with a member of the graduate faculty in composition. 3 units each. *Jaffe or Lindroth*

**317S. Seminar in the History of Music.** Selected topics. 3 units. *Staff*

**318S. Seminar in Performance Practice.** A practical seminar in which participants will be expected to perform, to introduce the work to be played or sung, and to outline its interpretative problems. A list of the music concerned will be posted in advance, and all students will participate in the study (if not necessarily in the performance) of the works announced. It is expected that the seminar will cover most periods, from Gregorian chant to twentieth-century repertoires. Consent of instructor required. 3 units. *Staff*

**331, 332, 333. Independent Study in Performance Practice and Interpretation.** The exploration of significant interpretive and performance-practice issues as they affect a specific repertory. Weekly meetings with a member of the graduate faculty. Consent of instructor and director of graduate studies required. 3 units each. *Staff*

**382S. Studies in Ethnomusicology.** 3 units. *Meintjes*

**390. Independent Study.** With the consent of a graduate faculty member and the approval of the director of graduate studies, the student will undertake a specialized research project of his/her own choosing. 3 units. *Staff*



**397, 398, 399. Composition.** Weekly independent studies at the doctoral level with a member of the graduate faculty in composition. 3 units each. *Jaffe or Lindroth*

#### **COURSES CURRENTLY UNSCHEDULED**

**341S. History of Music Theory to Rameau**

**351S. Studies in Musical Iconography**

**361S. Musical Organology**

## **Neurobiology**

Professor Purves, *Chair* (101I Bryan Research Building); Associate Professor Matthew, *Director of Graduate Studies* (213 Bryan Research Building); Professors Abou-Donia, Augustine, Chikaraishi, Erickson, Flanagan, W. C. Hall, W. G. Hall, Katz, McClay, McNamara, Nadler, Roses, Simon, Slotkin, Somjen, Staddon, Strittmatter, Tyrey, and Warner; Associate Professors Boustany, Cant, Corless, Fitzpatrick, Lewis, Madison, Nowicki, Schmechel, Schwartz-Bloom, Skene, Turner, and Wong; Assistant Professors Fremeau, Haglund, Hosford, Kauer, LaMantia, Lo, Mooney, Nicolelis, Peterson, and Reinhart; Professors Emeriti Diamond and Moore; Assistant Research Professor Einstein

At a time when many questions in biology have been eloquently answered, both scientists and the public correctly perceive that the brain remains, in fundamental ways, a profound mystery. During the last century tremendous advances have been made in understanding the structure, function, chemistry, and development of the brain. Nonetheless, broad and important questions about this complex organ remain to be answered in both biology and medicine. These include how genetic instructions are linked to brain development, the basis of learning and memory, the nature of consciousness, and the etiology and proper treatment of neurological diseases such as epilepsy and Alzheimer's disease.

The ways that neurobiologists approach these problems, while generally reductionist, are diverse. Preeminent are the techniques of molecular biology and molecular genetics, a host of sophisticated electrophysiological methods for detecting the activity of individual nerve cells or groups of nerve cells, and a wealth of anatomical methods for seeing the structure and connections of nerve cells. Novel and increasingly noninvasive means of imaging the nervous system—by nuclear magnetic resonance, detection of positron emission, or activity related magnetic fields—also hold great promise for better understanding the brain. Despite the power of these methods, progress in neurobiology—much as progress in any science—will depend on a few important insights arising from the imagination of neuroscientists who think deeply about these issues. The purpose of the graduate program in neurobiology is to enable talented students to think about the nervous system at this level.

Neurobiology at Duke is pursued in a variety of departments and settings, all of which are possible sites for students who wish to be trained in this field. Although much of this research is carried out in the Department of Neurobiology at Duke University Medical Center, several departments on the undergraduate campus also participate in this work. There are now forty-six faculty members associated with the graduate program in neurobiology at Duke, and a large and diverse body of students and other professionals engaged in neurobiological research.

Students in the graduate program in neurobiology take a core curriculum that covers the major subfields of contemporary neurobiology, but are generally free to pursue—with the help of faculty advisors—a course of study tailored to their needs, backgrounds, and individual interests. The core courses in the Department of Neurobiology are 208, *Neuronal Signaling: Ion Channels and Synapses*; 209, *Systems Neurobiology*; 211, *Developmental Neurobiology*; and 212, *Molecular Neurobiology*.

**202. Basic Neurobiology.** A systematic introduction to the structure and function of the mammalian nervous system designed specifically for first-year medical students. Lectures, laboratory exercises, clinical presentations, and problem-solving conferences during the month of January. 4 units. *Purves and staff*

**209. Systems Neurobiology.** (Graduate Core Course.) Structure and function of the mammalian sensory and motor systems. Consent of instructor required. Spring. 3 units. *Cant, Fitzpatrick, Nicolelis, and Purves*

**210. Individual Study.** Directed reading and research in neurobiology. Consent of director of graduate studies required. 3 to 9 units each. Variable credit. *Staff*

**211. Developmental Neurobiology.** (Graduate Core Course.) The development of the nervous system covering both the history and present status of the major issues in this field. Consent of instructor required. Spring. 3 units. *Katz, LaMantia, Lo, Matthew, Mooney, and Skene*

**219. Molecular and Cellular Bases of Differentiation.** See C-L: Cell Biology 219; also C-L: Immunology 219 and Pathology 219. 3 units. *Capel and staff*

**280. Student Seminar.** Preparation and presentation of seminars to students and faculty on topics of broad interest in neurobiology. Required of all first-and second-year neurobiology students. 1 unit. *Augustine and Katz*

**311, 312. Advanced Topics in Neurobiology.** Journal club format covering a variety of topics in neurobiology, for example, sensory transduction, neurobiology of disease. Focus on critical reading of the literature. Consent of instructor required. 1 unit each. *Kauer and staff*

**315. Molecular Neurobiology.** (Graduate Core Course.) The macromolecules responsible for the specialized functions of neurons and glia. Topics stress the biochemical, molecular, cellular, and genetic processes involved in the development and function of the mammalian nervous system. Introductory biochemistry is recommended. Consent of instructors required. Fall. 3 units. *Chikaraishi and Skene*

**317. Neuronal Signaling: Ion Channels and Synapses.** (Graduate Core Course.) Basic principles of neural electrical activity. Areas of emphasis will include action potential generation, ion channel structure/function relationships, modulation of channel activity, neurotransmitter secretion, transmitter receptors and mechanisms of synaptic plasticity. Consent of instructors required. Fall. C-L: Cell Biology 317. 3 units. *Augustine, Kauer, Lo, and Reinhart*

**360. Neuropharmacology.** Seminar-lecture course emphasizing neurotransmitter mechanisms and the mechanisms of action of drugs used to modify nervous system function. Material will be drawn from recent literature. Consent of instructor required. C-L: Pharmacology 360. 3 units. *Fremeau*

**364. Neurotoxicology.** See C-L: Pharmacology 364. 3 units. *Abou-Donia and staff*

**372. Research in Neurobiology.** Laboratory research in various areas of neurobiology. Credit to be arranged. Variable credit. *Staff*

## Pathology

Professor Pizzo, *Chair* (301B Davison); Assistant Professor Hale, *Director of Graduate Studies* (177 MSRB); Professors Adams, D. Bigner, S. Bigner, Bossen, Bradford, Jennings, Johnston, Klintworth, Reimer, Shelburne, Sommer, and Wittels; Associate Professors Crapo, Greenberg, Hoffman, Kane, Proia, Reimer, and Zwadyk; Assistant Professors Dewhirst, Enghild, Friedman, Hale, Jirtle, Kurtzberg, Lewis, and Zalutsky; Associate Research Professor Wikstrand; Assistant Clinical Professor Vollmer



The Department of Pathology offers graduate work leading to the Ph.D. degree with areas of specialization such as subcellular and molecular pathology. Course work is designed to give a broad background in classical and modern pathology with emphasis on the application of new biochemical, molecular, and genetic research techniques to unravel the causes of diseases, especially those associated with vascular and inflammatory disorders, toxicology, and tumor biology. Students will be required to take such courses as are necessary to obtain a broad foundation, as well as courses applicable to areas of specialty and research. Further information including brochures giving details of departmental facilities, staff, trainee stipends, and the M.D.-Ph.D. program are available from the director of graduate studies.

**219. Molecular and Cellular Bases of Differentiation.** See C-L: Cell Biology 219; also C-L: Immunology 219 and Neurobiology 219. 3 units. *Counce and staff*

**250. General Pathology.** Presentation of the fundamentals of pathology. Senior staff members give lectures developing broad concepts of disease processes. Emphasis is on etiology and pathogenesis of disease. Prerequisites: histology and consent of instructor. 4 units. *Steenbergen and staff*

**251. Laboratory Course in General Pathology.** Laboratory session to complement Pathology 250. Gross and microscopic material is correlated with and related to disease processes. Pathology 250 may be taken concurrently. Prerequisites: histology and consent of instructor. 4 units. *Steenbergen and staff*

**258. Cellular and Subcellular Pathology.** This course is designed for students wishing to broaden their knowledge of cellular structure and cellular pathology, and consists of lectures and seminars discussing the alterations in cellular structure and associated functions that accompany cell injury. Consent of instructor required. Hours to be arranged. 2 units. *Lefurgey, Roggli, Shelburne, and Sommer*

**275. Fundamentals of Electron Microscopy and Biological Microanalysis.** Emphasis will be placed on preparative procedures including freezing techniques and on the application of electron microscopy to ultrastructural pathology. Scanning electron microscopy, X-ray microanalysis, and scanning ion microscopy will be discussed in addition to conventional transmission electron microscopy. Limited laboratory experience included. Consent of instructor required. 3 units. *Ingram, Lefurgey, Roggli, Shelburne, and Sommer*

**325. Cardiovascular Pathology.** Study of cardiovascular disease processes, reviewing anatomic, embryologic, and physiologic features, and utilizing case material and gross specimens. Consideration of principles of electrocardiography. Consent of instructor required. 3 units. *Reimer and staff*

**353. Advanced Neuropathology.** Current problems and research methods related to diseases which affect the nervous system. Consent of instructor required. 3 units. *Staff*

**355. Graduate Seminar in Pathology.** Discussions outlining the scope of modern pathology. This will include reports of original research by members of staff and visitors. 1 unit. *Hale*

**357. Research in Pathology.** Independent research projects in various fields of pathology. Hours and credit to be arranged. Variable credit. *Graduate faculty*

**361, 362. Autopsy Pathology.** A detailed consideration of the morphologic, physiologic, and biochemical manifestations of disease. Emphasis is on individual work in the laboratory with tutorial supervision. Gross dissection; histologic examination; processing; analysis of morphologic, microbiologic, and biochemical data; and interpretation of results. For advanced students. 3 to 6 units each. Prerequisites: Pathology 250 and consent of instructor. Variable credit. *Proia and staff*



**364. Systemic Pathology.** Systematic presentation of the characteristics of disease processes as they affect specific organ systems. Consent of instructor required. 6 units. *Staff*

**367. Special Topics in Pathology.** Special problems in pathology will be studied with a member of the senior staff; the subject matter will be individually arranged. Hours to be arranged. 2 to 4 units. Variable credit. *Pizzo and staff*

**369. Ophthalmic Pathology.** Lectures, seminars, and laboratory sessions. Review of the normal anatomy and embryology of the eye as a basis for the study of the various ocular disease processes. The more common diseases of the eye will be considered in detail. Problems in ophthalmic pathology discussed together with methods of solving them. 3 units. *Klintworth*

**370. Developmental Pathology and Teratology.** A systematic study of disease processes involving the prenatal, natal, and postnatal period. Emphasis on developmental anatomy and teratogenesis. The format includes seminars and clinicopathologic correlations derived from gross and microscopic material. Prerequisites: Pathology 250 and anatomy and histology. 3 units. *Bradford*

**374. Pulmonary Pathology and Postmortem Pathophysiology.** Emphasis will be on pulmonary pathology and pathophysiology of infectious, metabolic, environmental, and neoplastic diseases, and certain diseases of unknown etiology (e.g., sarcoid, alveolar proteinosis). Ventilatory experiments will be done on excised human lungs. 3 units. *Roggli and staff*

**377. Pathology of the Kidney.** A comprehensive study of pathological, immunological, and clinical features of the glomerulonephritis, and pyelonephritis, as well as of metabolic, congenital, and neoplastic renal disorders. Lectures will be supplemented with gross and microscopic specimens, demonstrations, and special library studies. 3 units. *Howell*

**380. Diagnostic Immunology.** Diagnostic and laboratory procedures used in evaluating immunologic diseases: especially autoimmune, infectious, immunodeficiency, immunoproliferative, and hypersensitivity disorders. Emphasis on the theoretical and practical aspects of testing procedures and their proper interpretation. Consent of instructor required. 2 units. *R. Buckley, Howell, and Zwadyk*

**382. General Pathology for Toxicologists.** General principles of pathology using examples from human and experimental toxicological disease. Prerequisites: courses in biochemistry, physiology, and histology (histology may be taken concurrently). 3 units. *Jennings and pathologists from UNC and Research Triangle Park*

**385. Molecular Aspects of Disease.** Background, investigative methods, and recent advances in understanding the molecular basis of selected diseases. In-depth focus on a small number of diseases whose defects are known at genetic or molecular levels. Current integrative approaches to the study of human biology and disease. Prerequisites: introductory cell biology and biochemistry courses. 3 units. *Hale and staff*

## **COURSES CURRENTLY UNSCHEDULED**

**360. Cytochemistry**

**381. Cancer Biology**

## **Pharmacology**

Professor Means, *Chair* (C238 LSRC); Associate Professor McDonnell, *Director of Graduate Studies* (C259 LSRC); Professors Abou-Donia, Ellinwood, Kuhn, Mills, Nadler, Schan-

berg, Slotkin, Stiles, and Strauss; Associate Professors Linney, McNamara, Parker, Schwartz-Bloom, Shenolikar, and Whorton; Assistant Professors Collins, Fremeau, Heitman, Hellinga, Kwatra, Levin, Meyer, Pendergast, Peters, Schwinn, VanDongen, and Wang; Professors Emeriti Kirshner, Lack, Ottolenghi, and Wilder; Associate Research Professor Bartolome; Medical Research Professors Elion and Wilson

Pharmacology offers a graduate program which leads to the Ph.D. degree. Training is available in the following specific areas of pharmacology: neuropharmacology; toxicology; developmental, cardiovascular, behavioral, and endocrine pharmacology; regulation of cell growth and differentiation (cancer pharmacology); cellular signaling and receptor structure and function. Because pharmacology is an interdisciplinary science, the department considers applicants with strong undergraduate backgrounds in biological, chemical, and neural sciences. There is no foreign language requirement, and students normally complete all required coursework, including laboratory rotations, in the first year so they can move quickly into sustained independent research..

### **For Seniors and Graduates**

**200. Medical Pharmacology and Toxicology.** This basic course in pharmacology for medical and graduate students describes the action of drugs in relation to biochemical and physiological processes and the rationale for their clinical use. Additional topics include pharmacokinetics, drugs of abuse, and commonly encountered toxins. Nine lectures and one small-group, case-based discussion per week for eight weeks, April-June. 4 units. *Nadler and staff*

**210, 211. Individual Study and Research.** Directed reading and research in pharmacology. Consent of director of graduate studies required. 3 to 9 units each. Variable credit. *Staff*

**233. Essentials of Pharmacology.** Drug absorption, distribution, excretion, and metabolism. Structure and activity relationships; drug and hormone receptors and target cell responses. Consent of instructor required. Prerequisites: introductory biology; Chemistry 151L; Mathematics 31 and 32. 4 units. *Slotkin and staff*

**233A. Essentials of Pharmacology for Biologists.** Drug disposition, drug metabolism, drug receptor interactions. Prerequisites: introductory biology, Chemistry 151L; Mathematics 31 and 32. 2 units. *Slotkin*

**234. Interdisciplinary Approach to Pharmacology.** Several model systems (cardiovascular, reproductive, neural, and cell cycle) will be used to explore the molecular, biochemical, and physiologic basis of drug action. 4 units. *Shenolikar and staff*

**254. Mammalian Toxicology.** Principles of toxicology as related to humans. Emphasis on the molecular basis for toxicity of chemical and physical agents. Subjects include metabolism and toxicokinetics, toxicologic evaluation, toxic agents, target organs, toxic effects, environmental toxicity, management of poisoning, epidemiology, risk assessment, and regulatory toxicology. Prerequisites: introductory biology, and Chemistry 151L, or consent of instructor. 4 units. *Abou-Donia and staff*

**280. Student Seminar in Pharmacology.** Preparation and presentation of seminars to students and faculty on topics of broad interest to pharmacology. Required of all pharmacology graduate students. 2 units. *Whorton*

### **For Graduates**

**314. Integrated Case Studies in Toxicology.** Students are assigned topics relative to their chosen research discipline in toxicology and are asked to develop case studies to present at a roundtable workshop. Emphasis on review and analysis of toxicological

problems from a holistic (multidisciplinary) viewpoint. Offered on demand. C-L: Environment 314. 1 unit. *Abou-Donia*

**331. Laboratory Methods in Pharmacology.** Tutorial laboratory training in various fields of pharmacology including neuropharmacology, cardiovascular pharmacology, biochemical pharmacology, and biophysical pharmacology. Consent of instructor required. 3 to 6 units. Variable credit. *Staff*

**347, 348. Seminar in Toxicology.** A weekly research seminar throughout the year is required of participants in the Toxicology Program. Students, faculty, and invited speakers present their findings. 1 unit each. *Levin*

**360. Neuropharmacology.** Seminar-lecture course emphasizing neurotransmitter mechanisms and the mechanisms of action of drugs used to modify nervous system function. Material will be drawn from recent literature. Consent of instructor required. C-L: Neurobiology 360. 3 units. *Fremeau*

**364. Neurotoxicology.** Adverse effects of drugs and toxicants on the central and peripheral nervous system; target sites and pathophysiological aspects of neurotoxicity; factors affecting neurotoxicity, screening and assessment of neurotoxicity in humans; experimental methodology for detection and screening of chemicals for neurotoxicity. C-L: Neurobiology 364. 3 units. *Abou-Donia and staff*

**372. Research in Pharmacology.** Laboratory investigation in various areas of pharmacology. Credit to be arranged. Variable credit. *Staff*

**417. Cellular Signaling.** See C-L: Cell Biology 417; also C-L: Biochemistry 417. 3 units. *Bell, Caron, Casey, Means, and staff*

**423. Neurobiological Basis of Behavior.** Survey of neuroanatomical, neurophysiological, neurochemical, and neuropharmacological evidence of central nervous system function as it relates to normal and abnormal behavior. Clinical description, measurement of function, as well as the biological substrates of affective disorders and psychoses will be emphasized. Scientific bases of current therapeutic procedures, especially psychopharmacological, will be examined. Prerequisites: familiarity with basic neuroanatomy, neurophysiology, and neuropharmacology is assumed. 4 units. *Ellinwood and staff*

## COURSES CURRENTLY UNSCHEDULED

### 219. Tutorial in Pharmacology

## Philosophy

Professor Flanagan, *Chair* (201E West Duke); Associate Professor Ferejohn, *Director of Graduate Studies* (201D West Duke); Professors Brandon, Golding, Joy, MacIntyre, Mahoney, and Sanford; Associate Professor Posy; Assistant Professors Cooper, Güzeldere, and Schmaltz; Professors Emeriti Peach and Welsh

The Department of Philosophy offers graduate work leading to the A.M. and Ph.D. degrees. Tutorial work complements formal instruction. Students may, after taking a balanced program, specialize in any of the following fields: the history of philosophy, logic, philosophy of science, epistemology, metaphysics, philosophy of mind, philosophical analysis, ethics, aesthetics, political philosophy, philosophy of law, philosophy of medicine, and philosophy of religion.

Individual programs of study are developed for each student. Prior to being admitted to candidacy for the Ph.D. degree, the student must successfully complete seventeen courses distributed among five subject areas and pass two qualifying exams in the history of philosophy and the preliminary examination in the special area of



dissertation research. In satisfying these requirements, students are expected to demonstrate both factual knowledge and critical understanding. Work in a minor or related field, not necessarily confined to any one department, is encouraged but not required. A minor normally includes 6 units for the A.M. or the Ph.D. degree and may include more as a student's program requires or permits.

A student who meets the general requirements of the Graduate School may earn the A.M. degree in philosophy by passing an oral master's examination. This examination, which can be the defense of either a master's thesis or an alternative academic exercise approved by the department and the student's committee, is normally given in the student's fourth term of full-time registration. The examination can be given earlier in two special circumstances:

1. A student with a strong undergraduate background in philosophy who satisfies the department of his or her qualifications by submitting several samples of written work before beginning the program may be admitted to the master's program with the understanding that the master's examination can be given in the second or third term of full-time registration.
2. A student who combines the A.M. program in philosophy with another advanced degree program, such as the programs for the J.D., the M.D., or the Ph.D. in another field, will register as a full-time graduate student of philosophy for only two terms, the minimum registration that meets the general requirements of the Graduate School for the A.M. degree. These two terms of full-time registration need not be consecutive, and their position in the student's overall program is determined in individual cases. A student in a combined program will normally do some work in philosophy while registered in the student's primary program and do some work in the primary field while registered in philosophy. The master's examination can be given in the second term of full-time registration as a philosophy graduate student or in a later term when the student is registered in the primary program. A student in the philosophy Ph.D. program who meets the general requirements of the Graduate School for the A.M. degree may earn this degree by completing the preliminary exercises for the Ph.D. degree.

A reading knowledge of at least one foreign language, ancient or modern, is required for the Ph.D. degree. More than one language may be required where this is judged appropriate to the research demanded by the candidate's dissertation.

### For Seniors and Graduates

**203S. Contemporary Ethical Theories.** The nature and justification of basic ethical concepts in the light of the chief ethical theories of twentieth-century British and American philosophers. Consent of instructor required. C-L: Political Science 289S. 3 units. *Flanagan, Golding, or MacIntyre*

**204S. Philosophy of Law.** Natural law theory and positivism; the idea of obligation (legal, political, social, moral); and the relation of law and morality. 3 units. *Golding*

**206S. Responsibility.** The relationship between responsibility in the law and moral blameworthiness; excuses and defenses; the roles of such concepts as act, intention, motive, ignorance, and causation. 3 units. *Golding*

**208S. Political Values.** Analysis of the systematic justification of political principles and the political values in the administration of law. 3 units. *Golding*

**210. Logic for Computer Science.** See C-L: Computer Science 242. 3 units. *Loveland*

**211S. Plato.** Selected dialogues. C-L: Classical Studies 211S. 3 units. *Ferejohn*

**217S. Aristotle.** Selected topics. C-L: Classical Studies 217S. 3 units. *Ferejohn*

- 218S. Medieval Philosophy.** Selected problems. C-L: Medieval and Renaissance Studies. 3 units. *Mahoney*
- 219S. Late Medieval and Renaissance Philosophy.** Selected problems. C-L: Medieval and Renaissance Studies. 3 units. *Mahoney*
- 225S. British Empiricism.** A critical study of the writings of Locke, Berkeley, or Hume with special emphasis on problems in the theory of knowledge. 3 units. *Schmaltz*
- 227S. Continental Rationalism.** A critical study of the writings of Descartes, Spinoza, or Leibniz with special emphasis on problems in the theory of knowledge and metaphysics. 3 units. *Schmaltz*
- 228S. Recent and Contemporary Philosophy.** A critical study of some contemporary movements, with special emphasis on analytic philosophers. 3 units. *Posy*
- 231S. Kant's *Critique of Pure Reason*.** 3 units. *Posy*
- 232S. Recent Continental Philosophy.** Selected topics. 3 units. *Joy*
- 233S. Methodology of the Empirical Sciences.** Recent philosophical discussion of the concept of a scientific explanation, the nature of laws, theory and observation, probability and induction, and other topics. Consent of instructor required. 3 units. *Brandon or Cooper*
- 234S. Problems in the Philosophy of Biology.** Selected topics, with emphasis on evolutionary biology: the structure of evolutionary theory, adaptation, teleological or teleonomic explanations in biology, reductionism and organicism, the units of selection, and sociobiology. Consent of instructor required. C-L: Botany 234S and Zoology 234S. 3 units. *Brandon*
- 235S. Nineteenth-Century German Philosophy.** A critical examination of the writings of Hegel, Marx, or Nietzsche. 3 units. *Staff*
- 240S. Philosophical Psychology.** A study of recent work on the nature of the self and the nature and function of consciousness. Work from philosophy, psychology, cognitive neuroscience, and evolutionary biology will be discussed. 3 units. *Flanagan*
- 250S. Topics in Formal Philosophy.** Topics selected from formal logic, philosophy of mathematics, philosophy of logic, or philosophy of language. 3 units. *Posy*
- 251S. Epistemology.** Selected topics in the theory of knowledge; for example, conditions of knowledge, scepticism and certainty, perception, memory, knowledge of other minds, and knowledge of necessary truths. 3 units. *Sanford*
- 252S. Metaphysics.** Selected topics: substance, qualities and universals, identity, space, time, causation, and determinism. 3 units. *Sanford*
- 253S. Philosophy of Mind.** Analysis of concepts such as thought and belief; issues such as mind-body relations, thought and action, the nature of persons and personal identity. 3 units. *Flanagan or Sanford*
- 289S. Environmental Ethics.** Selected topics involving values and the environment, for example, extending morality to nature, rights of future generations, environmental aesthetics, diversity and stability, ideological biases in ecological knowledge. Consent of instructor required. C-L: Environment 282S. 3 units. *Cooper*
- 291S, 292S. Special Fields of Philosophy.** 3 units each. *Staff*

## For Graduates

**300. Problems in the Theory of Value and Judgment.** See C-L: Literature 300; also C-L: English 386. 3 units. *B. H. Smith*

**311. Philosophy and Medicine.** The scope of medicine as a philosophical problem, the concept of health, and investigation of ethical issues arising in medical contexts. Consent of instructor required. 3 units. *Golding*

## COURSES CURRENTLY UNSCHEDULED

**202S. Aesthetics: The Philosophy of Art**

**205S. Philosophy of History**

**254S. Topics in Philosophy of Religion**

**331, 332. Seminar in Special Fields of Philosophy**

## Physical Therapy

Professor Bartlett, *Chair* (050 Hospital); Assistant Professor Gwyer, *Director of Graduate Studies* (050 Hospital); Associate Professors Schenkman and Villanueva; Assistant Clinical Professors Dore, Figuers, and Riordan; Clinical Associates Crouch, Lawrence, and Ross; Professors Emeriti Branch and Horton

The Department of Physical Therapy offers an entry level professional program leading to the M.S. degree. To be eligible for admission to the program, applicants must have obtained a baccalaureate degree and have a background in the basic sciences and social sciences, including course work in biology, chemistry, physics, and psychology. The program requires successful completion of 54 units of coursework.

The program is designed to provide for integration of classroom knowledge and clinical learning experiences essential for the competent practice of physical therapy. In view of this integrated curriculum, failure in a major course within a semester would prevent the student from continuing in the program. Major courses are all courses offered by the Department of Physical Therapy as well as required courses offered by the Departments of Biological Anthropology and Anatomy, and Neurobiology. A grade of F (or noncredit in the case of Physical Therapy 343 and 344) in any of these courses will occasion withdrawal from the program. Program requirements also include a comprehensive examination at the completion of the curriculum and a research project. Further information may be obtained from the Director of Graduate Studies, Department of Physical Therapy, Box 3965, Duke University Medical Center, Durham, North Carolina 27710.

**210. Independent Study.** Designed for nonmajors. Consent of instructor required. Credit to be arranged. Variable credit. *Staff*

**301. Introduction to Scientific Inquiry.** Theory and methods of research process, research design, data collection, preparation of a research proposal. 2 units. *Gwyer and staff*

**303. Research.** Completion of a research project under the supervision of a faculty adviser; instruction in statistical techniques and the use of the computer. 3 to 5 units. Variable credit. *Gwyer and staff*

**313. Physical Agents.** Physical aspects and physiological effects of selected physical agents, including massage, superficial heat and cold, ultraviolet, diathermy, and ultrasound. 2 units. *Staff*



**314. Electrotherapy and Electrodiagnosis.** Physical aspects and therapeutic effects of electrical currents. Electrodiagnostic testing, introduction to electromyography and nerve conduction studies. 1 to 2 units. Variable credit. *Dore*

**317. Kinesiology.** Fundamentals of arthrology and myology, movement and joint description, surface anatomy, principles of biomechanics and anthropometry. 2 units. *Villanueva*

**318. Arthrology and Pathokinesiology.** Detailed study of the arthrology and kinesiology of the trunk and limbs during normal and pathological conditions, with emphasis on the sequential electromyographic and joint motion analysis of body segments during selected human movement patterns, including locomotion. 3 units. *Villanueva*

**319. Introduction to Evaluation and Patient Care.** Orientation to basic patient care skills, including reaction to illness. Introduction to Problem-Oriented Record System. Principles and methods of evaluation, including assessment of muscle function, joint mobility, neurological and respiratory function, posture, gait, and physical level of independence. Opportunities for direct patient care in laboratory and clinic. 3 units. *Ross and Villanueva*

**320. Evaluation and Therapeutic Procedures I.** Specific assessment of neuromuscular and cardiopulmonary functions. Physiological basis of therapeutic intervention and specific exercise programs. 3 units. *Figuers*

**321. Evaluation and Therapeutic Procedures II.** Assessment and treatment of specific neuromuscular and cardiopulmonary problems. Introduction to techniques of neuromuscular facilitation. 2 units. *Figuers*

**322. Evaluation and Therapeutic Procedures III.** Introduction to the neurophysiological basis for evaluation and treatment of children and adults with central nervous system disorders; emphasis on assessment of abnormal movement and selection of appropriate therapeutic programs. Problems associated with spinal cord injuries, methods of therapeutic intervention, and functional testing. 3 units. *Bartlett and Schenkman*

**332. Physical Therapy and Health Services: Administration and Issues.** Planning, organizing, delivering, and evaluating physical therapy and health services. Examination of health policy and issues. Principles of administration, leadership styles, and management roles. 2 units. *Bartlett and Riordan*

**333. Human Development: Pediatrics/Geriatrics.** Aspects of normal human development throughout the life cycle. Clinical features and management of common pediatric and geriatric problems. 2 units. *Riordan and staff*

**334. Introductory Pathology.** Fundamentals of pathology with emphasis on broad concepts of disease. 2 units. *Staff*

**335. Orthopedics.** Detailed examination of the musculoskeletal system, through lecture and laboratory, and the application of findings to the establishment of physical therapy care plans. Introduction to common orthopedic problems and their medical and surgical management. 2 units. *Lawrence*

**336. Medical Sciences.** The clinical manifestations and management of common medical and surgical disorders. Lectures by physicians, physical therapists, clinical pharmacists, and other health personnel; selected laboratory experiences. Areas covered include prosthetics and orthotics, burns, rheumatology, cardiopulmonary disorders, neurology, and neurosurgery. Seminars in patient management. 3 units. *Gwyer and Ross*

**340. Special Topics in Physical Therapy.** Opportunity for study under the direction of an individual staff member. Consent of director of graduate studies required. Credit to be arranged. Variable credit. *Staff*

**343. Directed Clinical Experience in Physical Therapy II.** Full-time supervised clinical learning experiences in physical therapy settings within limited radius of the university. 2 units. *Figuers and clinical staffs*

**344. Directed Clinical Experience in Physical Therapy III.** Full-time supervised clinical learning experiences in physical therapy settings throughout the country. 3 units. *Figuers and clinical staffs*

## **COURSES CURRENTLY UNSCHEDULED**

### **302. Research**

### **342. Directed Clinical Experience in Physical Therapy I**

## **Physics**

Professor Evans, *Chair* (108 Physics); Professor Weller, *Director of Graduate Studies*; Professors Behringer, Bilpuch, Fortney, Goshaw, Han, Johnson, Madey, Meyer, Müller, Palmer, Roberson, Thomas, and Walter; Associate Professors Greenside, Howell, Litvinenko, Oh, and Teitsworth; Assistant Professors Gauthier, Lee, O'Shea, Socolar, and Springer; Professors Emeriti Fairbank, Lewis, Robinson, and Walker; Research Associate Professor Tornow; Research Assistant Professor Phillips; Adjunct Professors Cifan, Guenther, Rogosa, and Strosio; Adjunct Associate Professor Skatrud; Adjunct Assistant Professor Everitt; Visiting Assistant Professor Brown

The Department of Physics offers graduate work for students wishing to earn the A.M., M.S., or Ph.D. degree. In addition to a balanced program of basic graduate courses, the department offers specialized courses and seminars in several fields in which research is being done by faculty and staff. With the help of faculty advisors, students select a course program to fit their individual backgrounds and goals, often including work in a related field. Students are encouraged to begin research work early in their careers, normally not later than the end of the second year of study, when most students complete their formal coursework. Active areas of research include experimental studies in condensed matter, high energy, nuclear and photon-laser physics, as well as theoretical work in condensed matter and nuclear and particle physics. In addition, the physics department is a major part of the university-wide Center for Nonlinear and Complex Systems.

### **For Seniors and Graduates**

**205. Introduction to Nuclear Physics.** Phenomenological aspects of nuclear physics, interaction of gamma radiation and charged particles with matter, nuclear detectors, particle accelerators, radioactivity, basic properties of nuclei, nuclear systematics, nuclear reactions, particle scattering, nuclear models of the deuteron, nuclear forces, parity. 3 units. *Weller*

**211. Fundamentals of Quantum Mechanics.** Waves and particles, Schrödinger equation, Dirac notation and mathematical tools, fundamental postulates, angular momentum and addition of angular momentum, applications to spin systems, harmonic oscillators, and the hydrogen atom. Prerequisites: Mathematics 111 and Physics 181. 3 units. *Springer*

**212. Applications of Quantum Mechanics.** Application of the fundamental postulates to atomic structure and spectra, solid state phenomena, statistical physics, scattering, perturbative techniques, treatment of systems of identical particles, and nuclear and particle physics phenomenology. Prerequisite: Physics 211. 3 units. *Staff*

**213. Nonlinear Dynamics.** Prerequisites: Computer Science 8 or 53, Mathematics 111, and Physics 51L, 52L. See C-L: Computer Science 264. 3 units. *Behringer or Greenside*

**214. Introduction to Solid-State Physics.** Discussion of solid-state phenomena including crystalline structures, X-ray and particle diffraction in crystals, lattice dynamics, free electron theory of metals, energy bands, and superconductivity, with emphasis on understanding electrical and optical properties of solids. Prerequisite: quantum physics at the level of Physics 143L or Electrical Engineering 211. C-L: Electrical Engineering 214. 3 units. *Daniels-Race or Teitsworth*

**217S. Advanced Physics Laboratory and Seminar.** Experiments involving the fields of electricity, magnetism, heat, optics, and modern physics. 3 units. *Meyer*

**220. Electronics.** Basic elements of modern electronics including AC circuits, transfer functions, solid-state circuits, transistor circuits, operational amplifier applications, digital circuits, and computer interfaces. 3 units. *Fortney*

**222S. General Relativity.** Review of special relativity; ideas of general relativity; mathematics of curved space-time; formation of a geometric theory of gravity; Einstein field equation applied to problems such as the cosmological red-shift and blackholes. Prerequisites: Physics 181 and Mathematics 111 or equivalents. 3 units. *Lee*

**230. Mathematical Methods in Physics.** Includes topics in complex analysis, residue calculus, infinite series, integration, special functions, Fourier series and transforms, delta functions, and ordinary differential equations; and use of MATHEMATICA for graphical, symbolic, and numerical computation. Prerequisite: Mathematics 111. 3 units. *Palmer*

**231. Mathematical Methods in Electromagnetism.** Mathematical topics include vector calculus, curvilinear coordinates, partial differential equations, orthogonal functions, Legendre polynomials, spherical harmonics, Bessel functions, and Green's functions. Topics from electromagnetism include Maxwell's equations, electrostatics, magnetostatics, potential theory, boundary-value problems, macroscopic media, and electromagnetic waves. Uses MATHEMATICA. Prerequisite: Physics 230. 3 units. *Palmer*

**244. Nuclear and Particle Physics.** Current ideas and models in nuclear and particle physics. Experimental methods; nuclear structure; nuclear reactions; families of elementary particles; quarks and gluons; weak interactions. Prerequisite: Physics 211. 3 units. *Staff*

**261. Laser Physics.** Laser physics and laser theory. Electromagnetic radiation and its interaction with matter. Laser excitation, oscillation, modulation, and detection theory. Prerequisites: Electrical Engineering 170L or Physics 182 and Electrical Engineering 211 or Physics 211. C-L: Electrical Engineering 276. 3 units. *Skatrud*

**271. Quantum Optics.** The linear and nonlinear interaction of electromagnetic radiation and matter. Topics include simple theory of lasers, second-harmonic generation, photon echos, bistability, Raman scattering, Brillouin scattering, phase conjugation, two photon lasers, and cooling and trapping of atoms. Prerequisites: Physics 212 and 231. 3 units. *Gauthier*

**281. Classical Mechanics.** Newtonian, Lagrangian, and Hamiltonian methods for classical systems; symmetry and conservation laws; rigid body motion; normal modes and forced oscillations; small nonlinear oscillations; canonical transformations; Hamiltonian chaos. 3 units. *Socular*

**291S. Physics at the Cutting Edge.** Introduction, for graduates and advanced undergraduates, to research topics at the core of recent advances in physics. Prerequisites: Physics 181, 182, and 211, or equivalents. 3 units. *O'Shea and Springer*



## For Graduates

**303. Introduction to Statistical Mechanics.** Fundamentals of kinetic theory, thermodynamics, and statistical mechanics with applications to physics and chemistry. Prerequisite: Physics 215. 3 units. *Behringer or Greenside*

**304. Advanced Topics in Statistical Mechanics.\*** This course will vary from year to year. Possible topics include Fermi liquids, systems of bosons, many-body theory, nonequilibrium statistical mechanics. Prerequisites: Physics 303 and 316. 3 units. *Staff*

**307. Introduction to Condensed Matter Physics.** Microscopic structure of solids, liquids, liquid crystals, polymers, and spin systems; elastic scattering and long-range order; topological defects; electronic structure of crystals (metals and semiconductors); phonons and inelastic scattering; magnetism; superconductivity. Prerequisite: Physics 215, 231, 303. 3 units. *Socolar or Teitsworth*

**308. Introduction to High-Energy Physics.** An overview of elementary particles and forces studied by experiments carried out at the frontier of high-energy physics. Discussion of basic symmetry principles and conservation laws of nature and review of their experimental tests. Development of the quark model of hadrons and comparisons with observed particle spectra. Review of the Standard Model by comparing predictions to current experimental measurements. 3 units. *Goshaw*

**310. Advanced Solid-State Physics.** Advanced energy band theory; Fermi liquid theory; many-body Green functions and diagrammatic techniques; interacting electron gas; superconductivity; applications. Prerequisite: Physics 307 or equivalent. 3 units. *Teitsworth*

**313. Advanced Topics in Nonlinear and Complex Systems.** Prerequisites: Computer Science 264 or Physics 213; recommended: Physics 230, 231, and 303 or equivalents. See C-L: Computer Science 364. 3 units. *Behringer, Greenside, or Palmer*

**315. Quantum Mechanics I.** Review of fundamental principles, Dirac notation, operators, eigenvalues and eigenfunctions, nonquantum models, multi-electron atoms, perturbation theory, selection rules, time dependent quantum mechanics, two-level atoms and lasers, Heisenberg equations, path integral approach, symmetry, rotation and angular momentum, tensor operators, Wigner-Eckart theorem, angular momentum recoupling, evaluation of matrix elements. 3 units. *Thomas*

**316. Quantum Mechanics II.** Quantum physics of systems of many identical particles, symmetrization, anti-symmetrization, scattering theory, Born approximation, WKB approximation, partial wave expansion, optical theorem, quantization of continuous systems, one-dimensional string, electromagnetic field, spontaneous emission, second quantization. Prerequisite: Physics 315. 3 units. *Müller or Thomas*

**317. Relativistic Quantum Mechanics.** Klein-Gordon equation, Lorentz group, Dirac equation, nonrelativistic limit, hydrogen atom, antiparticles, relativistic fields, gauge invariance, Yang-Mills equation, canonical quantization and particle interpretation of fields, Casimir effect, invariant perturbation theory, Feynman propagator, diagrammatic techniques, scattering matrix, applications to elementary particle reactions. Prerequisite: Physics 316. 3 units. *Müller or Springer*

**319. Advanced Electrodynamics.** Lienard-Wiechart potentials, scattering theory, radiation theory, MHD and plasmas. Prerequisite: Physics 231. 3 units. *Brown*

**321. Introduction to Accelerator Physics.** Aspects of modern accelerator physics; operation of a variety of accelerators from electron microscopes to large ring machines; phenomena responsible for stability and instability of particle beams. Prerequisite: Physics 231, 281, or equivalents. 3 units. *Litvinenko*

**332. Advanced Quantum Optics.** Advanced theory of light-matter interactions. Density matrix and semiclassical Bloch-Maxwell equations, three level laser and non-linear spectroscopic methods. Superradiance in extended media. Electromagnetic field quantization and radiative damping, master equation approach. Noise and fluctuations, first and second order coherence for classical and quantum fields. Dressed state picture of laser cooling. Prerequisite: Physics 231, 316, 317. 3 units. *Thomas*

**333. Electronic Properties of Submicron Solid-State Devices.** Prerequisite: quantum mechanics. See C-L: Electrical Engineering 312. 3 units. *Strosio*

**341. Quantum Field Theory.** Path integral quantization, generating functional for Green functions, quantization of gauge fields, perturbative formulations, spontaneous symmetry breaking, Goldstone theorem, Higgs-Kibble mechanism, operator product expansion, renormalization group, anomalies, semiclassical methods, solitons and instantons. Prerequisite: Physics 317. 3 units. *Staff*

**346. Topics in Theoretical Physics.** Weak interactions and QCD. Calculations in nuclear and particle physics using the standard model of weak interactions and QCD. Perturbative QCD and renormalization groups. Chiral theories. For high energy and nuclear experimentalists and theorists. Prerequisite: Physics 317. 3 units. *Staff*

**351. Physics Research Seminar.** Series of weekly presentations on research projects under investigation in the department. Credit/no credit grading only. No credit. *Staff*

**352. Seminar Techniques.** Discussion of ways of presenting seminars and participating in follow-on question periods. Each student is required to present at least one seminar on an appropriate research topic. 1 unit. *Meyer*

**360. Physics of Charged Particle Beams.** Relativistic charged particle dynamics; phase space concepts and emittance; focusing and transport optics; self-consistent theory of beams; emittance growth and control; particle accelerator systems; applications. Prerequisite: Physics 231 or equivalent. 3 units. *O'Shea*

**361. Physics of Free-Electron Lasers.** Seminar course on the basic physical mechanisms and effects responsible for emission and amplification of radiation by electron beams moving through transverse fields. Prerequisites: Physics 316 and 319. 3 units. *Madey*

**362. Free Electron Laser Laboratory.** Students have the option of performing one or more experiments selected to highlight the physical principles of FEL operation. Prerequisite: Physics 361. 3 units. *Madey*

## **COURSES CURRENTLY UNSCHEDULED**

**215. Principles of Quantum Theory**

**235. Computational Methods in Physics**

**240. Computer Applications to Physical Measurement**

**309. Solid-State Physics I**

**312. Phase Transitions and Critical Phenomena**

**334. Atomic Physics and Spectroscopy**

**335. Molecular Spectroscopy**

**342. Theory of Elementary Particles.\***

**345. Advanced High Energy Physics**

**397, 398. Low Temperature and Solid-State Seminar**



## Program in Political Economy

John Aldrich, Ph.D. and Hervé Moulin, Ph.D., *Codirectors*

The Graduate School offers a Certificate in Political Economy. The certificate is awarded to graduate students in the Departments of Economics and Political Science who successfully complete a series of courses designed to provide interdisciplinary training. Completion of the certificate should enable a student to teach and conduct research in the field of political economy. Work in this field should also be sufficiently compatible with the student's departmental training to enable students to present themselves on the market with the disciplinary credentials to secure an academic appointment.

To earn the Certificate in Political Economy, a student must successfully complete a minimum of five courses, three of which are to be drawn from the core courses and two from a specialized area. One of the three core courses and two of the five courses overall must be in economics, taken in the Department of Economics, the Fuqua School of Business, or the Institute of Public Policy. All of these courses must be at the graduate level, unless an exception is approved by the program director.

All students seeking the certificate are also required to complete successfully at least two courses within the following fields of specialization: Individual and Social Choice; Normative Political Theory and the History of Economic Thought; and Governments and Markets.

For additional information, contact Professor John Aldrich or Professor Hervé Moulin, Duke University, Department of Political Science, 214 Perkins Library, Durham NC 27708-90204, 919/660-4300.

## Political Science

Professor Lange, *Chair* (214-B Perkins); Associate Professor Grant, *Director of Graduate Studies* (308 Perkins); Professors Aldrich, Ascher, Fish, Gillespie, Grieco, Holsti, Horowitz, Hough, N. Keohane, R. Keohane, Kitschelt, Kornberg, Mickiewicz, Niou, Paletz, and Spragens; Associate Professors Eldridge, Johns, McKean, Morganstern, and Niou; Assistant Professors Archer, Brehm, Coles, Feaver, Goemans, Gronke, Hamilton, Orr, Shi, Simmons, and Stenner; Assistant Professor of the Practice Curtis; Professors Emeriti Ball, Barber, Braibanti, Cleaveland, Hall, and Leach; Adjunct Professors Kessler and O'Barr

The Department of Political Science offers graduate work leading to the A.M. and Ph.D. degrees. Before being admitted to candidacy for the Ph.D. degree, an applicant must have qualified for the A.M. degree. Instruction is designed to prepare the student primarily for teaching and research and for government service. Before undertaking graduate study in political science, a student is ordinarily expected to have completed at least 12 semester hours of course work in political science. Instruction is currently offered in the following fields: American government and politics, comparative government and politics, political theory, and international relations.

The candidate for the degree of Doctor of Philosophy in political science must take at least fifteen courses in all, including twelve in the department, and demonstrate competence in at least two general fields of the discipline as well as in a third general field or in a specialized subfield or in a field external to the department. The candidate must also fulfill a statistics and/or foreign language requirement.

The terminal degree of Master of Arts, for those who do not intend to continue with doctoral studies, is awarded following successful completion of: (1) eight one-semester courses of 3 units each, at least half of which must be in political science; (2) two other courses of 3 units each or 6 units of ungraded research; and (3) either the A.M. thesis or two seminar-length research papers done for Duke courses with a grade of G+ or above (the student will be required to pass an oral exam with either of these options). In



addition, candidates for the A.M. degree must demonstrate competence in one foreign language or in statistics.

Further details on the graduate program in political science, the departmental facilities, the staff, and available financial aid may be obtained from the Director of Graduate Studies, Department of Political Science.

### **For Seniors and Graduates**

**201S. Problems in International Security (D).** Major security issues. Prerequisite: a course in international relations or American foreign policy. 3 units. *Staff*

**202. American Foreign Economic Policy (D).** Formulation and implementation of American foreign economic policy in the twentieth century. Topics include theories of foreign economic policy-making, commercial and monetary policy, energy and agricultural policies, trade and security, aid to developing countries, management of the debt crisis, foreign investment, the industrial policy debate, and multinational corporations and banks. 3 units. *Simmons*

**203S. Issues in Politics and the Media in the United States (A).** Research seminar analyzing significant questions in the relationship between politics and the media of communication. Consent of instructor required. 3 units. *Paletz*

**205S. The Political Economy of Environmental Resources (B).** The rational choice tradition (public goods, collective action, game theory, property rights, new institutionalism) as applied to environmental problems, resource exploitation, environmental justice, and the design of an environmentally sound society. 3 units. *McKean*

**206S. Political Participation: Comparative Perspectives.** The study of political participation through development of an understanding of relevant research methods. The effects of political culture on political participation. Popular participation and mobilization systems in liberal democracies and developing countries. 3 units. *Shi*

**207S. American Constitutional Interpretation (A).** U.S. Supreme Court interpretation of selected provisions of the Constitution. Prerequisites: Political Science 127 or 177 or 178 and consent of instructor. 3 units. *Fish*

**208S. Analyzing the News (A).** See C-L: Public Policy Studies 240S. 3 units. *Paletz*

**209. Problems in State Government and Politics (A).** 3 units. *Staff*

**213S. Theories of International Political Economy (D).** Comparison and assessment of traditional and modern theories in terms of their logical and empirical validity. 3 units. *Grieco*

**216S. Evolution of European Marxism (C-N).** The central themes in the evolution of European Marxism: socialist thought prior to Marx; the writings of Marx and Engels. The themes are articulated in: Russian Marxism; Soviet Communism and its Marxist critics; the rethinking of Marx's political economy, the theory of the state, and concepts of class consciousness in the works of twentieth-century European Marxists. 3 units. *Coles*

**217. Comparative and Historical Methods (B).** See C-L: Sociology 214. 3 units. *Gereffi, Lin, Smith, or Tiryakian*

**218. Political Thought in the United States (C-N).** American political thought through the Civil War period. The Founders and their European antecedents. Debates over the Constitution, slavery, and the Union. 3 units. *Gillespie or Grant*

**220S. Problems in International Politics (D).** Prerequisite: one course in international relations, foreign policy, or diplomatic history. 3 units. *Holsti*

**222. Introduction to Statistical Analysis (C-E).** Basic applications of statistical theory to political questions: research design, hypothesis tests, computer data analysis. Consent of instructor required for undergraduates. 3 units. *Brehm or Gronke*

**223. Ancient Political Philosophy (C-N).** Intensive analysis of the political philosophy of Plato, Aristotle, and other ancient theorists. C-L: Classical Studies 203. 3 units. *Gillespie or Grant*

**224S. Modern Political Theory (C-N).** A historical survey and philosophical analysis of political theory from the beginning of the seventeenth to the middle of the nineteenth century. The rise of liberalism, the Age of Enlightenment, the romantic and conservative reaction, idealism, and utilitarianism. 3 units. *Grant or Spragens*

**225. Topics in Comparative Government and Politics: Western Europe (B).** Topics vary: the development of mass democracy and the welfare state; political and electoral participation and mobilization; social movements and political change; center-periphery conflicts; government and bureaucratic institutions and their relationships to society; the modern welfare state and political economy. 3 units. *Kitschelt or Lange*

**227S. Issues in International Communications (B).** Research seminar analyzing selected political issues in international communications. 3 units. *Paletz*

**228S. Nineteenth- and Twentieth-Century Political Philosophy (C-N).** Topics in nineteenth- and twentieth-century political philosophy, considering such authors as Hegel, Marx, Nietzsche, Kant, Fichte, Dostoevsky, and Heidegger. 3 units. *Coles or Gillespie*

**229S. Contemporary Theory of Liberal Democracy (C-N).** 3 units. *Spragens*

**230S. Introduction to Positive Political Theory (C-E).** Basic concepts of political economy, theory of preference and choice, social choice theory, and decision and game theory. 3 units. *Aldrich or Niou*

**231S. Crisis, Choice, and Change in Advanced Democratic States (B).** Contributions of Marx, Weber, and Durkheim toward analysis of modern democracies. Examination of selected contemporary studies using these three perspectives to highlight processes of change and crisis. Unsettling effects of markets upon political systems, consequences of bureaucratic regulation, and transformation of sources of solidarity and integration in modern politics. 3 units. *Kitschelt*

**232. Political Economy: Theory and Applications (C-E).** Selected topics. 3 units. *Lange*

**234S. Political Economy of Development: Theories of Change in the Third World (B).** Alternative approaches to political economy and social change in the Third World. C-L: Cultural Anthropology 234S, History 234S, and Sociology 234S. 3 units. *Staff*

**238S. Development of United States Courts of the Fourth Circuit (A).** Examines judges, courts, and law of United States district and old circuit courts and Court of Appeals: Maryland, Virginia, West Virginia, North Carolina, South Carolina, 1789-1958. Consent of instructor required. C-L: History 255A and Law 548S. 3 units. *Fish*

**239. Comparative History and International Relations (D).** Forces central to the practice of politics and international relations. Theoretical perspectives include those of Oswald Spengler, Schumpeter, Marx, Weber, and Aron as well as historical cases such as the Russian Revolution, the world wars, the Depression, and the nuclear era. 3 units. *Staff*

**240. American Political Behavior (A).** 3 units. *Staff*

**244S. The Politics of the European Community (D).** Historical, theoretical, and analytical treatment of reform and renewal of the European Community: trade, finance, economic and technological relationships. Impact of European Community development on international relations and American foreign policy. 3 units. *Grieco*

**247. Politics and Philosophy of Self and Other (C-N).** Epistemological, ontological, ethical, and political dimensions of relations between self and other. Theorists may include Husserl, Merleau-Ponty, Levinas, Derrida, Adorno, Gadamer, Sartre, Foucault, and Bakhtin. 3 units. *Coles*

**249. The Politics of Health Care (A).** See C-L: Public Policy Studies 253. 3 units. *Boychuk*

**250S. International Security after the Cold War (D).** Contemporary issues in international security: nuclear proliferation, balance of power, the role of force, alternative viewpoints. Consent of instructor required. 3 units. *Feaver*

**253S. Comparative Government and the Study of Latin America (B).** Current literature on major themes of Latin American politics. 3 units. *Archer*

**254S. Essential Global Democracy (A).** The failure and success in establishing real democracy, including focus on the main leaders. Issues of law, rights, equality, representation, reasoning, and other principles addressed in the context of practical politics. 3 units. *Staff*

**256S. Theory and Practice of National Security (D).** In-depth look at the theoretical and empirical literature explaining how states seek to guarantee their national security. Topics include: grand strategy, nuclear deterrence and warfighting, coercive diplomacy, military intervention, decisions for war, and civil-military relations. Special attention paid to U.S. national security during and after the Cold War. 3 units. *Feaver*

**257S. Making American Defense Policy (D).** Theory and practice of politics of national security in the United States. 3 units. *Feaver*

**258. Global Interdependence.** Historical, cultural, political, economic, and technological factors underlying increasing global interdependence. Different forms interdependence can and has taken. Earlier forms of interdependence and the events that shaped their development and destruction. Topics covered include the transmission of technological innovation and of new diseases as well as the rise of economic regionalism and how modern states have organized their responses. Open to seniors and graduate students including those in the professional schools. 3 units. *Aharoni and staff*

**262S. Transitions from Classic Communism (B).** The different patterns of reform among former and existing communist countries. 3 units. *Hough*

**265S. The Process of International Negotiation (D).** See C-L: Public Policy Studies 265S. 3 units. *Mayer*

**266. Comparative Social Policy (B).** See C-L: Public Policy Studies 266. 3 units. *Staff*

**267S. Policy-Making in International Organizations (D).** See C-L: Public Policy Studies 267S. 3 units. *Ascher*

**268. The Regulatory Process (A).** See C-L: Public Policy Studies 269. 3 units. *Hamilton*

**270S. Fundamentals of Political Economy (C-E).** Application of economic reasoning to the study of politics. Analysis of campaigns and elections; legislatures; and the regulation of industries. C-L: Economics 280S. 3 units. *Aldrich or Niou*



**271. International Environmental Regimes (B).** Law, politics, and institutional design of international regimes created among nations to cope with environmental problems. Includes study of particular conventions and treaties (for example, acid rain, ozone, carbon reduction, biodiversity, Antarctica, regional seas, ocean dumping), and the environmental implications of international trade rules and regimes (for example, GATT). C-L: Public Policy Studies 258. 3 units. *McKean*

**272. China and the World (D).** The formulation and development of Chinese foreign relations and foreign policy since 1949. 3 units. *Shi*

**274S. Seminar in Urban Politics and Urban Public Policy (A).** A probing of topical issues in both their theoretical antecedents and their contemporary manifestations. The intellectual debates and scholarly treatments surrounding issues of power in the city, urban redevelopment policy, urban poverty, and race in the city. C-L: Public Policy Studies 275S. 3 units. *Orr*

**275. The American Party System (A).** An intensive examination of selected facets of American national political parties, such as relationships between presidential and congressional politics, the politics of national conventions, recent foreign policy and party alignments, and the controversy over party government. 3 units. *Staff*

**276S. Media and Democratization in Russia (B).** See C-L: Public Policy Studies 243S. 3 units. *Mickiewicz*

**277. Comparative Party Politics (B).** The impact of social and political systems on party structures, functions, ideologies, and leadership recruitment. Emphasis upon research techniques and objectives. 3 units. *Lange*

**278S. Black Political Participation (A).** Topical issues concerning the political participation of African Americans, primarily on the national level. Black voter turnout, the electoral choice, the role of African Americans in the Democratic and Republican parties, black interest group politics, black political opinion, and black political socialization. C-L: African and Afro-American Studies 278S. 3 units. *Orr*

**281. American Political Thought Since the Gilded Age (C-N).** The development of American political thought since the late nineteenth century. Special emphasis on the Progressive era and on modern-day attempts to reconstruct theories of liberalism and democracy. 3 units. *Price*

**282S. Canada (B).** See C-L: History 282S; also C-L: Cultural Anthropology 282S, Economics 282S, and Sociology 282S. 3 units. *Staff*

**283S. Congressional Policy-Making (A).** Lawmaking and oversight of the executive branch by the U.S. Congress. Committee, party, executive, and interest group roles. C-L: Public Policy Studies 283S. 3 units. *Gronke*

**284S. Public Policy Process in Developing Countries (B).** See C-L: Public Policy Studies 284S. 3 units. *Ascher*

**286. Theory and Practice of International Security (D).** Analyses and criticism of the current theoretical, empirical, statistical, and case study literature on international security. No prerequisite, but Political Science 93 recommended. 3 units. *Goemans*

**287. Revolution, Reform, and Democratization (B).** A comparison of revolution and democratization in the United States, Western Europe, and Russia with that in the contemporary Third World. 3 units. *Hough*

**288. War and the National State (D).** Transformation of warfare by selected socio-economic and technological revolutions. Impact on international relations, 1800-1945.

No prerequisite, but Political Science 93 recommended. C-L: History 297. 3 units. *Goemans*

**289S. Contemporary Ethical Theories (C-N).** Consent of instructor required. See C-L: Philosophy 203S. 3 units. *Flanagan, Golding, or MacIntyre*

**291. Research Methods in Japanese.** Consent of instructor required. See C-L: Japanese 291; also C-L: Cultural Anthropology 290, History 292, and Sociology 291. 3 units. *Staff*

**299. Advanced Topics in Government and Politics.** Topics vary from semester to semester.

A. American Government and Politics

B. Comparative Government and Politics

C. Political Theory

D. International Relations

3 units. *Staff*

### For Graduates

**245. Ethics and Policy-Making (C-N).** Not open to students who have taken Public Policy Studies 116. Graduate status only. See C-L: Public Policy Studies 223. 3 units. *Price*

**303. Seminar on Statistics.** Application of advanced statistical methods to political science research problems. Primary focus on multiple regression procedures. Emphasis on assumptions, interpretation of results, and use of the computer. Consent of instructor required. 3 units. *Staff*

**304. Classics in American Politics (A).** Introduction to fundamental research and theoretic statements in American politics. 3 units. *Aldrich, Brehm, or Paletz*

**305. Seminar in United States Foreign Policy.** Decision making in American foreign policy. The sources, substance, and consequences of United States policy will be examined. The emphasis is on the period since 1945. 3 units. *Holsti*

**306. Public Opinion (A).** Intensive study of the causes and consequences of public attitudes toward politics, with special attention given to recent research in the field. 3 units. *Brehm or Gronke*

**307. Formal Modeling in Political Science.** Introduction to formal analysis of recent work in political science. Focus on a number of important theorems and their proofs drawn from such areas as bargaining, deterrence, public goods, collective choice, electoral politics, and new institutionalism. Students will in the process be expected to begin work on formal proofs of their own. Prerequisite: one course in game theory. 3 units. *Niou*

**308. Individual Research.** Students will conduct research designed to evaluate hypotheses of their choice. Reports on the research must be presented in appropriate professional style. 3 units. *Staff*

**309. Seminar in International Relations.** Critical survey of theories and research in international relations and foreign policy. Emphasis will be placed on the interrelation between theory and research. 3 units. *Holsti*

**310. Scope and Methods in Political Science.** Designed to explore philosophical assumptions in political science, theory, and matters of evidence and judgment, the course is meant to be an introduction to variations in research design, empirical methods, and the execution of research. 3 units. *Staff*

**312. Electoral Behavior (A).** Survey of major themes and controversies in electoral behavior research. Aggregate and individual level analyses of elections; historical and contemporary trends in voting behavior. 3 units. *Aldrich or Gronke*

**313. Seminar in Political Communications.** A field survey with emphasis on politics and media in the United States. 3 units. *Paletz*

**315. Noncooperative Game Theory.** See C-L: Economics 315; also C-L: Statistics 386. 3 units. *Moulin*

**317. The New Institutionalism in Political Science.** Survey of recent developments in information economics, theory of the firm, the property rights paradigm, and contract theory. Emphasis on using these techniques to answer classic questions in political science. 3 units. *McKean*

**320. Political Psychology.** Examination of the human political situation through the study of actual problems and solutions at the level of: (1) the individual, (2) political discourse among government officials, (3) public discourse in the media. 3 units. *Staff*

**321. Seminar in Political Theory.** Prerequisite: 6 units in political science elected from 223, 224, 229, 231, or their equivalents. 3 units. *Staff*

**322. Topics in Early Modern Political Thought.** Selected readings from political thinkers ranging from Machiavelli to Mill. 3 units. *Grant or Spragens*

**324. Seminar in Comparative Politics (A).** A field survey with emphasis on the politics of developing areas. Note: it is generally expected that political science graduate students taking comparative politics as a preliminary field will take both this course and Political Science 325. 3 units. *Staff*

**325. Seminar in Comparative Politics (B).** A field survey with emphasis on the politics of advanced industrial democracies. Note: it is generally expected that political science graduate students taking comparative politics as a preliminary field will take both this course and Political Science 324. 3 units. *Staff*

**326. Research Seminar in Comparative Government and Politics.** Seminar in major issues in comparative politics and intensive individual student research projects. 3 units. *Staff*

**327. Comparative Political Behavior.** This seminar critically examines research on variations in elite and mass behavior as well as the conditions affecting that behavior in a variety of Western countries. 3 units. *Kornberg*

**332. Seminar on Political Economy: Micro Level.** Survey of recent work in political science and economics on the organization of institutions: political, sociological, and economic. Focus upon the ways in which rational choice theory is applied to areas outside of economics. 3 units. *Staff*

**333. Seminar in Political Economy: Macro Level.** Survey and analysis of recent work in political science, economics and sociology on the relationships between states and markets. Special emphasis on the ways states influence market outcomes and the ways the organization of power in markets influences state behavior, especially in democratic systems. 3 units. *Lange*

**340. Seminar in American Politics and Institutions.** Survey, analysis, and critique of the literature. 3 units. *Aldrich, Brehm, Gronke, or Paletz*

**341. Legislative Politics.** Survey of current research on the legislative branch of government. Topics include: elections, committee systems, oversight, party organizations, and others. 3 units. *Staff*



**351. Comparative Law and Politics: Ethnic Group Relations (B).** Various approaches to the reduction of conflict in deeply divided societies, primarily in Asia and Africa, with secondary attention to Western countries. The nature of ethnic identity, the sources of group conflict, and the forms and patterns it takes. Methods of analyzing social science materials and utilizing them for the design of politics, laws, and institutions. Consent of instructor required. 3 units. *Horowitz*

**381. Research Seminar in Latin American Government and Politics.** Prerequisite: Political Science 253 or equivalent. 3 units. *Staff*

**390. Research Seminar in International Relations.** Prerequisite: Political Science 226, Political Science 309 or equivalent. 3 units. *Holsti*

**397. Selected Topics in Government and Politics.** Topics vary from semester to semester. 2 units. *Staff*

**398. Selected Topics in Government and Politics.** Topics vary from semester to semester. 3 units. *Staff*

#### **COURSES CURRENTLY UNSCHEDULED**

**204S. Ethics in Political Life (C-N)**

**211S. Current Problems and Issues in Japanese Politics (B)**

**219S. Film and Politics (A)**

**221S. International Institutions and the World Political Economy (D)**

**233. Intermediate Statistical Methods (C-E)**

**235S. Comparative Development of Islam (B)**

**236S. Hegel's Political Philosophy**

**243S. Political Applications of Game Theory (C-E)**

**246S. Political Hypocrisy and Idealism (C-N)**

**251S. The American Presidency (A)**

**252S. The Nation-State and the International System (D)**

**260S. The Tradition of Political Inquiry (C-N)**

**269S. War and Wealth in the International System (D)**

**279S. Political Protest and Collective Mobilization (B)**

**293. Federalism (B)**

**360. Seminar in Government and Politics in the Soviet Union**

#### **RELATED COURSE WORK IN THE SCHOOL OF LAW**

It is possible to receive graduate credit for course work completed in the Duke University School of Law, under regulations referred to in this bulletin under the section on academic regulations.

## **Psychology**

Professors C. Erickson and Roth, *Co-Directors of Graduate Studies*; Professors Carson, Coie, Costanzo (*Chair: Social and Health Sciences*), Eckerman, R. Erickson, W. Hall, Hamilton, Holland, Lockhead (*Chair: Experimental*), Rubin, Staddon, and M. Wallach;

Associate Professors Day, Meck, Putallaz, Schmajuk, and Williams; Assistant Professors Curran, Fischer, Hill, Mazuka, Needham, and Serra; Research Professors Crovitz, Goldstein, and L. Wallach; Assistant Research Professor Higa; Professors Emeriti Alexander, Borstelmann, Diamond, Kimble, Kremen, Lakin, H. Schiffman, and Wing. *Faculty who teach in psychology with primary appointments in another department:* Professors Bettman, Blumenthal, Brodie, Gallagher, George, W. C. Hall, Keefe, Palmer, Payne, S. Schiffman, Sheppard, Spenner, Surwit, Vidmar, and Williams; Associate Professors Anderson, Curry, Linville, Lochman, Logue, Nowicki, Quinn, Siegler, Wells, and Welsh; Assistant Professors Gustafson, March, and Robins; Research Professor Goldstein; Assistant Research Professor Madden; Research Scholar Fairbank; Assistant Adjunct Professors McNeilly and Stocking; Visiting Professor McLoyd

The department offers graduate work leading to the Ph.D. degree. Graduate work is organized around five areas of concentration: *cognitive and sensory sciences* with emphases on memory, autobiographical memory, perception, psychophysics, sensory coding, development, and aging; *psychobiology or behavioral neuroscience* with emphases on cognitive neuroscience, mechanisms of behavior, learning, neural networks, ingestion, sex differences, time perception and sensory systems; *developmental psychology*, focusing on social and cognitive development, developmental psychopathology, psychobiology, and the cognitive, perceptual, social, and language development of infants, adolescents, and adults; *personality and social*; and *clinical* with concentrations in personality and psychopathology, developmental psychopathology, and health psychology, and which meets the accreditation criteria of the American Psychological Association. Research and training are highly collaborative with Duke's Schools of Medicine, Business, Law, and Engineering, and with many departments of Arts and Sciences including Cultural Anthropology, Neurobiology, Physics, Sociology, and Zoology. State-of-the-art facilities include special laboratories and clinics, computational facilities, and technical assistance.

Applicants must take the General portion of the Graduate Record Examination. There is no foreign language requirement. An undergraduate major in psychology is usual but is not required. Our goal is to produce skilled scientists and scholars who are ready for careers in academic, research, clinical, or industrial settings. To achieve this, students work closely with mentors and secondary advisors in individualized training programs. In the first year, students take a year-long proseminar plus selected courses, have research experience in at least two laboratories, and select an advisory committee to help tailor their program. In the second year, students write a paper that reflects mastery of a delineated field of inquiry, as well as taking any needed courses. Coursework decreases progressively such that research and some teaching are the essential activities by the third year. The Ph.D. is typically completed within five years.

### **For Seniors and Graduates**

**202S. Autobiographical Memory.** A review and critical analysis of the literature, theory, and empirical study of autobiographical memory within cognitive psychology. Consent of instructor required. 3 units. *Rubin*

**203S. Seminar in Cognitive Neuroscience.** Relating empirical findings in perception and cognition to structures and processes in the brains of animals and people. Emphasis on vision. Consent of instructor required. 3 units. *Lockhead*

**205S. Children's Peer Relations.** An examination of the empirical literature with emphasis on the functions that peers serve for children, the developmental course of these relationships, the clinical ramifications and possible explanations for inadequate peer relations (including an examination of the family's role), and interventions used to improve children's relationships with their peers. Consent of instructor required. 3 units. *Putallaz*

**206S. Pediatric Psychology.** The conceptual and methodological bases for the field. Case material illustrating how developmental, biological, and psychosocial processes act together in child health and illness. Focus on adjustment and coping with illness and treatments related to cystic fibrosis, sickle cell disease, cancer, diabetes, and seizure disorders. Consent of instructor required. 3 units. *Thompson*

**207S. Topics in Psychobiology.** The biological substrates of human behavior in health and disease. Drug abuse, alcoholism, depression, schizophrenia, and human aggression. Films and videotapes. Student presentations; patient interviews. Prerequisites: senior standing for undergraduates and consent of instructor. 3 units. *Brodie*

**209S. The Cognitive Psychology of Oral Traditions.** The structure of songs and genres from oral traditions and the processes used in their composition, transmission, and recall, analyzed from the perspective of cognitive psychology. Consent of instructor required. 3 units. *Rubin*

**210S. Cognition.** Schematic view of cognitive psychology plus intensive study of two to three specific research topics such as forms of representation, individual differences, and problem-solving models. Emphasis on alternative experimental and theoretical approaches. Prerequisites: Psychology 92 or 107 for undergraduates and consent of instructor. 3 units. *Day*

**211S. Neural Development and Comparative Cognition.** Current research on neural development of cognitive processing in several sensory systems (for example, auditory, visual, and olfactory systems), and in several species (for example, aplysia, song birds, rats, cats, monkeys, and humans) with regard to how attention and memory processes develop. Both the normal ontogeny of cognitive ability and differentiation that is altered during an early sensitive period of development. Prerequisites: three courses in biological psychology for undergraduates and consent of instructor. 3 units. *C. Williams*

**212S. Human Memory.** Classical and modern literature, data, and theories relating to mechanisms of information processing, storage, and retrieval. Consent of instructor required. 3 units. *Hasher or Rubin*

**214S. Development of Social Interaction.** Major concepts and methods pertaining to early social development, emphasizing human social behavior and a developmental psychobiological approach. Consent of instructor required. 3 units. *Eckerman*

**218S. Personality, Stress, and Disease.** The interaction between person and social environment as a contributor to development of physical disease. Both epidemiological and laboratory-based research considered. Prerequisites: Psychology 98 or 109A for undergraduates and consent of instructor. 3 units. *R. B. Williams*

**220S. Psycholinguistics.** Selected topics such as neurolinguistics, linguistic versus pictorial representation, individual differences, oral versus written expression, language and personality, and the language-thought interaction. Prerequisites: Psychology 134 for undergraduates and consent of instructor. 3 units. *Day*

**223S. Animal Learning and Cognition: A Neural Network Approach.** Several connectionist theories of animal learning and cognition. Neural network theories of classical conditioning; the concepts of models of the environment, prediction of future events, reliable and salient predictors, redundancy reduction, competition for limited capacity short-term memory, mismatch between predicted and observed events, stimulus configuration, inference generation, modulation of attention by novelty, and timing. Neural networks of operant conditioning; the concepts of goal-seeking mechanisms, response-selection mechanisms, and cognitive mapping. How neural network models permit simultaneous development of psychological theories and models of the brain.



Prerequisites: Mathematics 31, 32 for undergraduates and consent of instructor. 3 units. *Schmajuk*

**224S. Timing and Time Perception.** Selected topics dealing with the psychobiological bases of internal clocks used to time in the-seconds-to-minutes range. Impact of neural pacemakers systems on cognitive processes involved in divided attention, temporal memory, and the determination of the quantal unit of time and/or consciousness. Consent of instructor required. 3 units. *Meck*

**225S. Ingestion: Behavior and Neurobiology.** Selected topics dealing with the behavioral and neural organization of feeding and drinking. Reading typically includes: ethological and behavioral system perspectives on ingestive behavior organization; the learning and conditioning literature relevant to experience effects on feeding and feeding development; recent research on the physiological and metabolic control of ingestion; and current considerations of the neurobiological basis of ingestive behavior. Emphasis on understanding ingestion as a sequence of behavior components whose control is both hierarchical and dynamic. Prerequisites: Psychology 91 or 103 for undergraduates and consent of instructor. 3 units. *W. G. Hall*

**227S. Behavioral Physiology: Basic Systems.** Organ systems review of physiology, emphasizing the role of the central nervous system and behavior in physiological function. Prerequisites: Psychology 91 or 103 or 159S for undergraduates and consent of instructor. 3 units. *Surwit*

**228S. Behavioral Treatment of Disease.** Critical review of the literature on the effective behavioral interventions in the treatment of physical illness. Focus on the role of the psychologist in medical settings. Consent of instructor required. 3 units. *Surwit*

**230S. Social Behavior of Animals.** Developmental, ecological, and physiological aspects of territorial, sexual, parental, and aggressive behavior. Consent of instructor required. 3 units. *C. Erickson*

**234S. Advanced Personality.** Selected topics of current interest concerning empirical research on personality. Strategies for the definition of research questions and the evaluation of research progress. Consent of instructor required. 3 units. *M. Wallach*

**255S. Life-Span Development.** Analysis of development across the life span. Origins and course of cognitive and emotional development; components of personality and social development. Applications to models of both normative and pathological development. Prerequisites: Psychology 97 or 105 for undergraduates and consent of instructor. 3 units. *Costanzo or Goldstein*

**261S. Advanced Learning Theory.** Selected topics in the data and theory of basic processes of learning, memory, and motivation in animals and humans. Emphasis on the nature of theory construction and evaluation, and the relation of current perspectives to older ones. Consent of instructor required. 3 units. *Holland*

**262S. Minority Mental Health: Issues in Theory, Treatment, and Research.** Survey and discussion of theoretical, research, and clinical issues in minority mental health with special emphasis on African-Americans. Prerequisites: Psychology 119 for undergraduates and consent of instructor. 3 units. *Anderson*

**270S, A-R, U-Z. Selected Problems.** New courses not yet in the bulletin are designated as 170S or 270S depending on level. Since all faculty offer these courses, their contents vary accordingly. Different courses indicated by the letter. Consent of instructor required. 3 units. *Staff*

**273. Statistics I.** Foundations of probability and statistical inference. Introduction to the general linear model via multiple regression. Emphasis on application via

statistical computing with SAS. Prerequisites: Psychology 117 or Statistics 110 for undergraduates and consent of instructor. 3 units. *Curran or staff*

**274. Statistics II.** Basic and advanced ANOVA models via the GLM. Broad-based overview of multivariate models, including MANOVA, canonical correlation, discriminant analysis, and factor analytic models. Emphasis on application and use of computer packages. Prerequisites: Psychology 117 or Statistics 110 and Psychology 273 for undergraduates and consent of instructor. 3 units. *Curran or staff*

**280S. History and Systems of Psychology.** The birth, course, present, and future of psychology from the ancient philosophers to neural networks and neuroanatomy. Prerequisites: Psychology 11, 91, 92, 97, 98, 99, 103, 105, 107, 108, or 109 for undergraduates and consent of instructor. 3 units. *Serra*

**287S. Family Theory and Family Therapy.** An examination and analysis of theories of family functioning and models of family therapy. Survey of empirical literature on family process assessment with child and adolescent psychopathology and marital function and disfunctions, and on parent training and family therapy models that arise out of theory and research. Methods include didactic presentation and group discussions of readings. Case material supplements discussions. Consent of instructor required. 3 units. *Wells*

**288S. Advanced Topics in Social Science and Law.** Study of one broad domain in social science and law; exact content area to vary by semester. Emphasizes how empirical findings in social science are translated and used by the legal system. Possible areas include women's legal issues, family violence, expert testimony, employment discrimination. Prerequisites: Psychology 129 for undergraduates and consent of instructor. 3 units. *Fischer*

#### **For Graduates**

**301. Group Psychotherapy and Group Influence Processes.** Theories of group interventions and group techniques. 3 units. *Lakin*

**302. Personality Theory.** An advanced course in the representative theories of human functioning, from Freud to contemporary approaches. 3 units. *Staff*

**304-305. Personality and Psychopathology, I and II.** Semester one considers perspectives and fundamental principles in the study of personality. Semester two is devoted to the implications of these principles for psychopathology and behavior disorders and for the classification of abnormal behavior. 6 units. *Staff*

**307. Models of Intervention and Prevention.** Concepts of prevention and mental health promotion; community psychology and social systems; epidemiology and prediction of disorder; intervention strategies; evaluation of prevention trials; and ethical and cultural issues. Specific approaches to psychotherapy and psychoeducational therapy will be discussed in relation to the prevention-intervention continuum. 3 units. *Lochman*

**309. Legal Intervention in Domestic Violence.** This course will explore three interdisciplinary elements of legal intervention in domestic violence: 1) the psychology of battering; 2) the social science research that has the effectiveness of domestic violence interventions; 3) the theory and critique of these legal interventions. Within each of these three sections, topics will include: the dynamics of domestic violence, why men abuse, and the coping processes of battered women; studies of police arrest, prosecution, and restraining orders; and discussion of a wide range of criminal and civil remedies/policies such as mandatory arrest, no-drop prosecution, reformed restraining order laws, court-ordered treatment for batterers, and self-defense for battered women who kill their abusers. C-L: Law 574. 2 units. *Fischer*

**311-312. Introduction to Psychology: Social and Health Sciences.** Provides brief coverage of the history of psychology in general, and clinical psychology in particular. Acquaints students with research and clinical work of faculty, and introduces them to elementary questions of ethics in human research, treatment, and prevention. No credit. *Surwit*

**315. Seminar in Consumer Behavior.** See C-L: Business Administration 562. 3 units. *Bettman*

**316. Behavioral Decision Theory.** See C-L: Business Administration 525. 3 units. *Payne*

**323, 324. Seminar in Community Psychology.** An examination of the organization and functioning of community systems and an exploration of factors involved in system changes through psychologically based intervention strategies. On-line experiences with school system consultation will provide a primary basis for study. 3 units each. *Costanzo or staff*

**329S. Evolution, Development, and Behavior.** Behavior is affected by and has an effect upon evolution, developmental, and physiological processes. Current concepts and controversies in biopsychology. 3 units. *Staff*

**330S. Learning, Memory, and Cognition.** Current concepts and controversies in the way people and other animals perceive, think, and remember. 3 units. *Staff*

**332. Developmental Psychopathology.** Consideration of major psychopathological disorders in childhood and adolescence, theories, and research on etiology and prediction of disorder. 3 units. *Lochman*

**333. Cognition and Teaching.** An examination of key phenomena and concepts in cognitive psychology (especially in areas of perception, attention, memory, comprehension, mental representation, and problem solving) and their implications for the teaching-learning process at the college level. 3 units. *Day*

**335. Personality Assessment.** Assessment of persons through a variety of methods, including clinical and semistructured interviews. Introduction to self-report and projective testing, and to observational rating methods. Laboratory experiences in clinical setting. 3 units. *Curry*

**339. Ethics for Psychotherapists.** A course for graduate students in the clinical program. 3 units. *Lakin*

**343-344. Clinical Practicum.** Intensive experience and supervision in clinical intervention processes. Student training in psychotherapy strategies and techniques and in clinical consultation skills is conducted in clinical settings. 0 to 6 units. Variable credit. *Staff*

**346. Seminar in Ethics.** An ethics seminar for graduate students in the clinical program. Credit grading only. No credit. *Thompson*

**348. Psychotherapy with Children and Families.** Major theoretical approaches to clinical intervention with children and adolescents, either individually or in the family system context. 3 units. *Coie*

**349-350. Practicum in Psychological Research.** 6 units. *Staff*

**352. Child Assessment.** Interview methods; intelligence and achievement testing; personality and developmental batteries; peer, teacher, and parental instruments; and observational techniques. 3 units. *Coie and Putallaz*



**353. Research Practicum in Prevention.** Students will be involved in a short-term research apprenticeship to a faculty member other than their mentor for hands-on experience with research efforts pertinent to the prevention of illness. 3 units. *Staff*

**355-356. Research Practicum.** Students will be involved in a research apprenticeship to a faculty member for hands-on experience with research efforts. 6 units. *Staff*

**396. Graded Research.** 1 to 3 units. Variable credit. *Staff*

**399. Special Readings in Psychology.** Consent of instructor required. 3 units. *Staff*

## **COURSES CURRENTLY UNSCHEDULED**

**208S. Emotion**

**215S. Cognitive Development**

**217S. Advanced Social Psychology**

**264S. Gender, Hormones, and Health**

**289S. Psychology of Prevention**

**310. Seminar in Perception**

**337. Seminar in Sensory Discrimination**

## **Public Policy Studies**

Professor Ascher, *Chair* (124 Sanford Institute Building); Professor Ladd, *Director of Graduate Studies* (214A Sanford Institute Building); Professors Behn, Clotfelter, Cook, Fleishman (law), Healy (environment), Hough (political science), Kuniholm, Ladd, Magat (business), Mayer, Mickiewicz, Pearsall (engineering), Price (political science), and Schroeder (law); Associate Professors Conrad, Leitzel, Lipscomb, McConahay, and Moore (business); Assistant Professors Hamilton, Korstad, Miller, Pickus, Ramachandran, Roselius, and Stangl (statistics); Professors of the Practice Boothby, Brown, Harris, Raspberry, Sanford, and Stubbing; Professor Emeritus Barber (political science); Adjunct Professor Yaggy; Adjunct Associate Professor Arcia; Visiting Associate Professor McElroy; Visiting Assistant Professor Boychuk; Senior Research Scientist Vaupel; Lecturer Payne; Visiting Lecturers Ahearne, Emison, Felsman, Lethem, Lin, Slawson, Wallace, and Whetten-Goldstein

The Master of Public Policy (M.P.P.) degree requires two academic years, a summer internship, and a master's "memo" to be researched and written on a problem of current policy concern. The first year is devoted to core courses in policy analysis, quantitative methods, economics, political analysis, and ethics. The summer internship is with a federal, state, or local agency of government, a not-for-profit organization, or business. The second-year curriculum includes course work in public management, electives in substantive policy areas, and the master's "memo." In the first year, the fall semester core courses include: Microeconomics and Public Policy-Making (PPS 217), Politics of the Policy Process (PPS 219), Statistics and Data Analysis for Policymakers (PPS 222), Ethics and Policy-Making (PPS 223), and Policy Analysis I (PPS 303). In the spring, first-year students take Quantitative Evaluation Methods (PPS 231), Microeconomics: Policy Applications (PPS 232), and Policy Analysis II (PPS 304), plus at least one additional elective.

Students who are concurrently enrolled in a Ph.D. program or a professional degree program (M.D., J.D., M.B.A., etc.), or who have already obtained such a degree, can apply for a compressed version of the M.P.P. program. Such students complete the full first-year curriculum, the summer internship, and the master's "memo" and are excused from most second-year requirements. As a result, the M.P.P. can be completed in one addi-

tional year. Students usually apply for a joint degree program simultaneously with their applications to the graduate departments or professional schools, or during their first or second year of advanced study. More information concerning the M.P.P. programs can be obtained by writing the director of graduate studies at the Sanford Institute of Public Policy, Box 90243, Duke University, Durham, NC 27708-0243 or e-mail [mpp@pps.duke.edu](mailto:mpp@pps.duke.edu)."

### **Related Programs**

In addition to the M.P.P., the Sanford Institute offers the Program in International Development Policy (PIDP) through its Center for International Development Research. This program offers a Master of Arts degree in international development policy that requires two academic years and an internship. A nondegree certificate option is also available. The PIDP is designed for mid-career professionals with at least five years of experience in a development-related field. The institute does not award a Ph.D. See fuller description elsewhere in this bulletin.

See also the description elsewhere of the Center for International Development Research, which provides both long- and short-term courses of study in policy analysis and problems related to sustainable development.

### **For Seniors and Graduates**

**216S. Economics of Education.** Prerequisite: Economics 149 or Public Policy Studies 110. See C-L: Economics 216S. 3 units. *Clotfelter*

**218. Macroeconomic Policy.** Survey of macroeconomic theory and analysis of policies designed to reduce unemployment, stimulate economic growth, and stabilize prices. Conventional monetary and fiscal instruments, employment policies, and new policies designed to combat inflation. C-L: Economics 218. 3 units. *Leitzel or McElroy*

**222. Statistics and Data Analysis for Policymakers.** Not open to students who have had Mathematics 136 or Statistics 110A, 110B, 112, 113, 114, 210B, or 213. See C-L: Statistics 210A. 3 units. *Stangl*

**236. Public Management I: Managing Public Agencies.** Operations management, information and performance, personnel management, public sector marketing. 3 units. *Behn*

**238. Public Budgeting and Financial Management.** Fund accounting for government; techniques of financial analysis, including break-even analysis, cost accounting, cash-flow analysis, and capital budgeting; and governmental budgeting, including the budgetary process and reforms, and the budget crunch in the public sector. 3 units. *Stubbing*

**240S. Analyzing the News.** Research seminar on political messages and effects of media. Methods and findings of content analysis, survey research, critical theory, semiology; research project integrating these approaches. C-L: Political Science 208S. 3 units. *Paletz*

**241. Reporting the American People.** Critical analysis of the sources of information the media rely upon in reporting opinion and policy preferences: opinion polls, bellwethers, informed elites. Includes the design and execution of a public opinion poll on a topic of local or national interest. 3 units. *McConahay*

**242S. Chinese Economy in Transition.** Prerequisites: Economics 1 or 51, and 2 or 52. See C-L: Economics 242S. 3 units. *Yang*

**243S. Media and Democratization in Russia.** Analysis of policy, content, and audiences of mass media in the Soviet Union and post-Soviet Russia. Focus on such

issues as media access, media markets, television and electoral campaigns, and relationship to political authority. C-L: Political Science 276S. 3 units. *Mickiewicz*

**251S. Regulation of Vice and Substance Abuse.** Focus on activities that have traditionally been defined as vices (including drinking, smoking, use of opiates, gambling, pornography, prostitution) and the problems of regulating and controlling them in a free society. Evaluation of social costs and benefits of various alternative policy interventions. Prerequisite: Economics 149 or Public Policy Studies 110. C-L: Economics 251S. 3 units. *Cook*

**253. The Politics of Health Care.** The history, status, and future of health care policy. Grounded in political theories such as distributive justice, altruism, and contractarianism. Focus on policy formation. Case discussions of American reform controversies in light of international experience. C-L: Political Science 249. 3 units. *Boychuk*

**255S. Health Policy Analysis.** Group analysis of a current health-policy problem. Project involves background research, data acquisition, analysis, writing, and presentation of a substantial policy report. Designed for candidates seeking the undergraduate certificate in health policy. Consent of instructor required. 3 units. *Boychuk*

**257. United States Policy in the Middle East.** From World War II to the present with a focus on current policy options. C-L: History 296. 3 units. *Kuniholm*

**258. International Environmental Regimes.** See C-L: Political Science 271. 3 units. *McKean*

**259S. State and Local Public Finance.** Analysis of state and local revenue sources, intergovernmental fiscal relations, budgets and expenditures, fiscal aspects of economic development, and the municipal bond market. Policy topics include financing schools and transportation systems, tax policy, and current fiscal issues. Prerequisite: Public Policy Studies 217 or equivalent. C-L: Economics 259S. 3 units. *Ladd*

**260. Economic Policy Analysis of Nonrenewable Resources.** Economic analysis of nonrenewable resources, development, and exploration. Relationship between natural resources and other economic sectors. Emphasis on public policy tax and regulatory policy, natural resources in developing economies and foreign investment in the mining sector. Prerequisite: Economics 149, Public Policy Studies 110, or Public Policy Studies 232. C-L: Economics 260. 3 units. *Conrad*

**261. Evaluation of Public Expenditures.** Basic development of cost benefit analysis from alternative points of view, for example, equity debt, and economy as a whole. Techniques include: construction of cash flows, alternative investment rules, inflation adjustments, optimal timing and duration of projects, private and social pricing. Adjustments for economic distortions, foreign exchange adjustments, risk and income distribution examined in the context of present value rules. Examples and cases from both developed and developing countries. C-L: Economics 261 and Environment 272. 3 units. *Conrad*

**262S. Seminar in Applied Project Evaluation.** Initiate, develop, and perform a project evaluation. Range of topics include measuring the social cost of deforestation, the B1 Bomber, a child nutrition program, the local arts program. Prerequisite: Economics 285 or Public Policy Studies 261. C-L: Economics 262S. 3 units. *Conrad*

**264S. Research Seminar: Topics in Public Policy I.** Selected topics. 3 units. *Staff*

**265S. The Process of International Negotiation.** Negotiations between governments or between international institutions and governments. Explorations of historic cases, such as the U.S.-Canada free trade negotiation, the INF talks, and Camp David Summit. C-L: Political Science 265S. 3 units. *Mayer*



**266. Comparative Social Policy.** An examination of social and health policies in advanced industrial countries. Focus on understanding the comparative methods and role of the state, market, and voluntary sector in policy development and implementation. C-L: Political Science 266. 3 units. *Staff*

**267S. Policy-Making in International Organizations.** Emphasis on international financial institutions such as the World Bank and the International Monetary Fund. C-L: Political Science 267S. 3 units. *Ascher*

**269. The Regulatory Process.** The utility of contending theories of the regulatory process in explaining regulatory outcomes and of the normative explanations for regulation (for example, public goods, natural monopolies). Analysis of how regulations actually emerge from the interaction of the public, interest groups, executive, legislature, and judiciary. C-L: Political Science 268. 3 units. *Hamilton*

**271S. Schools and Social Policy.** Public schools as instruments of public policy. Economic and statistical analysis of the educational production process. Consideration of alternative school reforms. 3 units. *Ladd*

**272L. Resource and Environmental Economics.** Includes laboratory. Prerequisite: introductory course in microeconomics. See C-L: Environment 270L; also C-L: Economics 270L. 4 units. *Kramer*

**274. Resource and Environmental Policy.** Development of a policy analysis framework for studying resource and environmental policy. Political institutions, interest group theory, public choice theory, role of economics in policy analysis, ethics and values. Application to current and historical U.S. policy issues. Prerequisite: Environment 270L, Public Policy Studies 272, or consent of instructor. C-L: Environment 274. 3 units. *Staff*

**275S. Seminar in Urban Politics and Urban Public Policy.** See C-L: Political Science 274S. 3 units. *Orr*

**283S. Congressional Policy-Making.** See C-L: Political Science 283S. 3 units. *Gronke*

**284S. Public Policy Process in Developing Countries.** Policy-making patterns in less developed countries; examples from Latin America, Africa, and Asia. C-L: Political Science 284S. 3 units. *Ascher*

**285. Land Use Principles and Policy.** Consideration of four major roles of land in the United States: as a producer of commodities, financial asset, component of environmental systems, and location of development. Analysis of market allocation of land, market failure, role of public planning and regulation. C-L: Environment 285. 3 units. *Healy*

**286S. Economic Policy-Making in Developing Countries.** Fiscal, monetary, and exchange rate policies in less developed countries; issues in public policy toward natural resources and state-owned enterprises. Prerequisite: Economics 149 or Public Policy Studies 110. C-L: Economics 286S. 3 units. *Conrad or Ramachandran*

**288S. Current Issues in United States Federal Tax Policy.** Prerequisite: Economics 149 or consent of instructor. See C-L: Economics 288S. 3 units. *Staff*

## **For Graduates**

**217. Microeconomics and Public Policy-Making.** Consumption and production theory, welfare economics, theories of collective choice, market structures and regulation, and nonmarket decision making. Not open to students who have taken Public Policy Studies 110. Graduate status only. 3 units. *Clotfelter or Ladd*

**219. The Politics of the Policy Process.** The formulation of public policies, substantive policies in a variety of contexts from local government to international affairs; the role of legislatures, interest groups, chief executives, and the bureaucracy in defining alternatives and in shaping policy from agenda formulation to implementation. Graduate status only. 3 units. *Ascher, Mayer, or Miller*

**223. Ethics and Policy-Making.** Normative concepts in politics, liberty, justice, and the public interest: historical and philosophical roots, relationship to one another and to American political tradition, and implications for domestic and international problems. Not open to students who have taken Public Policy Studies 116. Graduate status only. C-L: Political Science 245. 3 units. *Pickus or Price*

**231. Quantitative Evaluation Methods.** Problems in quantifying policy target variables such as unemployment, crime, and poverty. Experimental and nonexperimental methods for evaluating the effect of public programs, including topics in experimental design, regression analysis, and simulation. Graduate status only. Prerequisite: Public Policy Studies 222 or equivalent. 3 units. *Cook, McConahay, or Stangl*

**232. Microeconomics: Policy Applications.** Cost benefit analysis of public programs. Public utility regulation, pollution regulation, hospital rate setting, regulation of product safety. Quantitative methods and microeconomic theory for analysis of both normative and positive aspects of economic policy. Graduate status only. Prerequisites: Economics 149 or Public Policy Studies 110 or 217 and familiarity with regression analysis or concurrent enrollment in Public Policy Studies 231. C-L: Economics 232. 3 units. *Conrad or Ladd*

**303. Policy Analysis I.** Introduction to policy analysis and advising. Emphasis on written and oral communication skills, the substance of public policies, and the role of policy analysts. Open to public policy studies M.P.P. students only. 3 units. *Staff*

**304. Policy Analysis II.** The role and influence of policy analysis. The examination of specific public policy cases and recommendations for action. Emphasis on written and oral communications skills. Open to public policy studies M.P.P. students only. 3 units. *Staff*

**305. Policy Analysis III.** Emphasis on individual or group projects. Preparation for Master's Memo. Open to public policy studies M.P.P. students only. 3 units. *Staff*

**306S. Special Topics in Public Policy.** Selected topics. Prerequisite: graduate level. 3 units. *Staff*

**325S, 326S, A-I. Program in International Development Policy Sector Seminar.** Topics in policy issues and institutional structures of sectoral policy-making in less developed countries. Open only to Fellows of the Program in International Development Policy, or by consent of instructor.

- A. Urban and Rural Development in Developing Countries
  - B. Natural Resources and Environmental Policy-making
  - C. Urban Environmental Issues in Developing Countries
  - D. Restructuring the Energy Sector in Developing Countries
  - E. Privatization and the Role of the State in Development
  - F. Central American Resource and Environmental Policy
  - G. Institutional Design for Managing the Environment
  - H. Managing the Project Cycle for Sustainable Development
  - I. Communities and Sustainable Development in Latin America
- Variable credit. *Staff*

**327S, 328S, A-I. Program in International Development Policy Issue Seminar.** Topics in policy issues and institutional structures of sectoral policy-making in less developed countries. Consent of instructor required.

- A. Appropriate Technology and Technology Transfer
- B. Economic Analysis of Nonrenewable Resources
- C. State Reform and Social Sector Policy in Developing Countries
- D. Technology Transfer and Foreign Aid to Developing Countries
- E. Structural Adjustment and Poverty
- F. Economic Analysis of Development
- G. Project Evaluation and Development Policy
- H. Economic Foundations of Development Policy
- I. International Trade and Finance Policy

Variable credit. *Staff*

**386. Independent Research Topics in International Development Policy.** Selected topics. Consent of instructor required. Variable credit. *Staff*

**387. Master's Project in International Development Policy.** Emphasis on individual projects. Open to PIDP students only. Consent of instructor required. 3 units. *Staff*

**388. Research Tutorial in Public Policy.** 3 units. *Staff*

**399. Special Readings in Public Policy Studies.** 3 units. *Staff*

#### **COURSES CURRENTLY UNSCHEDULED**

**204S. Ethics in Political Life**

**221. Decision Analysis for Public Policymakers**

**237. Public Management II: Managing Public Agencies**

**245S. Leadership Tutorial**

**252S. United States Strategic Arms Policy**

**254. Transportation Planning and Policy Analysis**

**270S. Humanistic Perspectives on Public Policy**

**278. Human Service Bureaucracies**

## **Religion**

Professor Lawrence, *Chair* (123A Gray); Professor Clark, *Director of Graduate Studies* (209A Divinity School); Professors D. Campbell, Carroll, Corless, Crenshaw, Hauerwas, Hays, Heitzenrater, Hillerbrand, Kort, Langford, C. Meyers, E. Meyers, Osborn, Richey, E. Sanders, D. M. Smith, H. Smith, Steinmetz, Surin, Wainwright, and Wintermute; Associate Professors Berger, Bland, Fulkerson, Martin, Nickerson, Peters, and Wacker; Assistant Professors Cornell, Hart, Jennings, Joyce, Keefe, and Turner

The Department of Religion offers graduate work in two programs leading to the A.M. and Ph.D. degrees. In Program I, students may concentrate their studies in one of three Academic Supervisory Groups (ASGs): ASG 1 (Biblical Studies, Ancient Judaism, and Ancient Christianity); ASG 2 (Historical Studies in Judaism, Christianity, and Islam); and ASG 3 (Theological, Cultural, and Critical Studies). Applicants should make clear the subdiscipline (or at least the general area) in which they wish to concentrate, e.g., medieval Islam, early Judaism, contemporary Christian ethics, critical theory. In addition, students may apply to Program II, which permits more interdisciplinary work and more courses outside the graduate program in religion. Students will be expected to take courses which will contribute to an adequate understanding of their chosen fields of



specialization and will be required to take two written preliminary examinations within their field of concentration. In addition to course work in their major field, students will take such other courses in cognate fields as will contribute to the enrichment of their major studies and will be required to take one written preliminary examination in a single cognate area within the department. A minor requirement may be fulfilled by work in a cognate department, such as classical studies, English, history, literature, philosophy, political science, or sociology, and will constitute the outside minor and material for a fourth written preliminary examination. There is, in addition, an oral examination conducted by the student's committee immediately subsequent to the written examinations. A foreign language requirement of two languages must be met before taking the doctoral preliminary examination.

The program of doctoral studies presumes a foundation in the academic study of religion. Students applying for graduate work in religion directly from an undergraduate program should have had a strong undergraduate major in religion, and will be accepted for the Ph.D. program only upon the satisfactory completion of the A.M. degree with the department.

### **For Seniors and Graduates**

**200. Person and Work of Christ.** The problem of knowledge of Christ and formulation of a doctrine of his work and person in the light of biblical eschatology. 3 units. *Staff*

**201. Studies in Intertestamental Literature.** Selected documents of the Apocrypha and Pseudepigrapha examined exegetically and theologically in their relation to postexilic Judaism. Consent of instructor required. 3 units. *Wintermute*

**202. Language and Literature of Dead Sea Scrolls.** A study in interpretation. Prerequisite: a knowledge of Hebrew. 3 units. *Wintermute*

**203. Studies in American Methodism.** Research seminar devoted to selected topics in the Wesleyan and Methodist traditions in America. 3 units. *Richey*

**204. Origen.** The systematic and apologetic writings of an important Alexandrian thinker and exegete of the third century. 3 units. *Clark*

**206. The Christian Mystical Tradition in the Medieval Centuries.** Reading and discussion of the writings of medieval Christian mystics (in translation). Each year will offer a special focus, such as: women at prayer; fourteenth-century mystics; and Spanish mystics. Less well-known writers as well as giants will be included. 3 units. *Keefe*

**207. Hebrew Prose Narrative.** Focus on the grammar, syntax, and prose style of classical Hebrew composition; a comparative reading of modern and precritical Jewish and Christian commentary. Readings spanning the spectrum from the early Hebrew prose of Genesis and I and II Samuel to the late compositions of Chronicles and Ezra-Nehemiah. One year of classical Hebrew required. C-L: Old Testament 207. 3 units. *Staff*

**208. Classical Hebrew Poetry: An Introduction.** The problem of defining and understanding what is "poetic" in classical Hebrew. Theories of Hebrew poetry from Lowth to Kugel and O'Connor illustrated with readings from Psalms, Isaiah, Job, and Jeremiah. One year of classical Hebrew required. C-L: Old Testament 208. 3 units. *Staff*

**209. Old Testament Theology.** Studies of the Old Testament in regard to theological themes and content. 3 units. *Crenshaw*

**211. Authority in Theology.** The idea and function of authority in theology. 3 units. *Fulkerson*

**212. Theories of Religion.** Late nineteenth-and twentieth-century theories, interpretations, and approaches to the study of religion. 3 units. *Hart*

**214. Feminist Theology.** Examination of feminist theologians and religionists, their critical perspective on the Christian tradition and constructive proposals out of the resources of "female experience." 3 units. *Fulkerson*

**216. Syriac.** The script and grammar, with readings from the Syriac New Testament and other early Christian documents. Prerequisites: some knowledge of Hebrew and Aramaic. 3 units. *Wintermute*

**217. Islam in India.** History and thought of major Indian Muslims from Biruni to Wali-Ullah, with special attention to the role of Sufism. An introduction to selected Muslim scholars and saints who contributed to the interaction between Islam and Hinduism in northern India during the second millenium A.D. 3 units. *Lawrence*

**218. Religions of East Asia.** Shinto, Taoism, Confucianism, and East Asian Buddhism studied phenomenologically in relation to the Axial Age. 3 units. *Corless*

**219. Augustine.** The religion of the Bishop of Hippo in late antiquity. C-L: Medieval and Renaissance Studies. 3 units. *Clark*

**220. Rabbinic Hebrew.** Interpretive study of late Hebrew, with readings from the Mishnah and Jewish liturgy. 3 units. *E. Meyers or staff*

**222. John among the Gospels.** A consideration of the character, content, and purpose of the Gospel of John in relation to the synoptic and apocryphal gospels. Prerequisite: one year of Hellenistic Greek. 3 units. *M. Smith*

**223, A-G. Exegesis of the Hebrew Old Testament.**

- A. Pentateuch
- B. Historical Books
- C. Major Prophets
- D. Minor Prophets
- E. Writings
- F. Proverbs
- G. Genesis

3 units. *Staff*

**224B. Comparative Semitic II.** An introduction to the morphology and syntax of classical Arabic and the Semitic languages of Palestine-Syria, together with a consideration of their relationships to Hebrew. 3 units. *Wintermute*

**225. Living Issues in New Testament Theology.** Critical examination of major problems and issues in New Testament interpretation and theology. 3 units. *Staff*

**226, A-F. Exegesis of the Greek New Testament I.**

- A. Matthew
- B. Romans
- C. Mark
- E. The Gospel and Epistles of John
- F. I and II Corinthians

3 units. *Staff*

**227, A-E. Exegesis of the Greek New Testament II.**

- A. Luke
- B. Galatians
- C. The Pastoral Epistles
- D. Epistles of Peter and James
- E. Acts

3 units. *Staff*

**227F. Exegesis of the Greek New Testament II: The Synoptic Gospels.** Concentration on the "classical" methods of studying the synoptic gospels: source criticism, form criticism, and redaction criticism. Students expected to become proficient in using the Greek synopsis. Prerequisite: two years of Greek or the equivalent. 3 units. *Sanders*

**230. Sainthood in Comparative Perspective.** Examination of sainthood, saint cults, and sacred biography from a multidisciplinary and global perspective. 3 units. *Cornell*

**231S. Seminar in Religion and Contemporary Thought.** Analytical reading and discussion of such critical cultural analysis as is found in the works of Polanyi, Arendt, Trilling, and others, with appraisal of the relevance of theological inquiry. 3 units. *Staff*

**232S. Religion and Literary Studies.** Theories concerning the relation of religion to literary forms, particularly narrative. 3 units. *Kort*

**233. Modern Narratives and Religious Meanings.** A study of kinds of religious meaning or significance in representative American, British, and continental fiction of the first half of the twentieth century. 3 units. *Kort*

**234. Early Christian Asceticism.** The development of asceticism and monasticism in the first six centuries of Christianity. C-L: Women's Studies. 3 units. *Clark*

**235. Heresy: Theological and Social Dimensions of Early Christian Dissent.** 3 units. *Clark*

**236. Luther and the Reformation in Germany.** The theology of Martin Luther in the context of competing visions of reform. C-L: Medieval and Renaissance Studies. 3 units. *Steinmetz*

**238. Witchcraft in New England.** Examination of historical interpretations of the "problem" of witchcraft in New England with attention to the interpretive issues confronted in the study of religious communities and the contributions of gender studies, sociology, anthropology, and psychology to the study of history. 3 units. *Joyce*

**241. Classical Islamic Theology and Ethics.** Topics include unity of God, free will and predestination, nature of divine revelation, Aristotelian and Neoplatonic influences on Islamic thought, Sunni "orthodoxy," Andalusian peripateticism, Islamic monism, ethical rationalism, ethical voluntarism, and Islamic moral philosophy. C-L: African and Afro-American Studies 241. 3 units. *Cornell*

**243. Archaeology of Palestine in Biblical Times.** Investigation of selected material remains from the Bronze Age to the Persian period. Trends in biblical studies, with particular attention to methodological considerations and current developments. 3 units. *C. Meyers*

**244. The Archaeology of Palestine in Hellenistic-Roman Times.** The study of material and epigraphic remains as they relate to Judaism in Hellenistic-Roman times, with special emphasis on Jewish art. 3 units. *E. Meyers*

**245. Special Topics in Religion.** Subject varies from semester to semester. 3 units. *Staff*

**247. Readings in Latin Ecclesiastical Literature.** Readings in Latin of pastoral, theological, and church-disciplinary literature from the late patristic and medieval period. Prerequisite: knowledge of Latin. 3 units. *Keefe*

**248. Theology of Karl Barth.** A historical and critical study of Barth's theology. 3 units. *Osborn*



**250. Women in the Medieval Church.** The history of the medieval Church told from its women figures: the life and writings of saints, heretics, abbesses, queens, mystics, recluses, virgins, bishops' wives, and reformers. 3 units. *Keefe*

**253. Feminist Theory and the Study of Christianity.** Nineteenth- and twentieth-century feminist theories and their implications for Christian doctrine and biblical interpretation. C-L: Women's Studies. 3 units. *Clark and McClintock-Fulkerson*

**254. Justice, Law, and Commerce in Islam.** Islamic approaches to the legal and ethical regulation of social life. C-L: Law 568. 3 units. *Cornell*

**256. John Wesley in Controversial and Ecumenical Theology.** A study of John Wesley and his theology: his engagements with other confessional traditions, and his views on such matters as church, ministry, sacraments, and authority. Relation to contemporary theology, especially "Faith and Order." 3 units. *Wainwright*

**257. New Testament Ethics.** Scope and basic problems of New Testament ethics; consideration of two important New Testament books. Problems and issues such as the role of the law, symbolic language in ethical discourse, conscience, homosexuality, the state, and self-deception. 3 units. *Hays*

**258. Coptic.** Introduction to the Sahidic dialect with selected readings from Christian and Gnostic texts. Prerequisite: one year of Greek or consent of instructor. 3 units. *Wintermute*

**259. Icon Theology.** A study of theological controversies surrounding the use of images in Christian worship, followed by an attempt to perceive the symbolic conventions and doctrinal content of some Eastern, Western, and contemporary icons. 3 units. *Wainwright*

**260. Life and Times of the Wesleys.** A seminar on John and Charles Wesley and their colleagues in relation to English culture and religion in the eighteenth century. 3 units. *Heitzenrater*

**262. Writing Women's Lives: Gender and Religion in America.** The ways in which religious beliefs and institutions have affected the lives of women in the American context. C-L: Women's Studies. 3 units. *Joyce*

**263. Third World Theology.** An examination of selected theological writings from Asia, Africa, and Latin America, comparing their perspectives and their unique contributions with contemporary Christian thought. 3 units. *Berger*

**266. Ethics and Health Care.** 3 units. *H. Smith*

**267. American Religious Thought.** Examination of selected classic studies of American religious thought. 3 units. *Joyce, Richey or Wacker*

**268. Revelation and Authority in the Church.** A critical and constructive examination of contemporary concepts. 3 units. *H. Smith*

**270. American Evangelicalism, Fundamentalism, and Pentecostalism.** A study of some of the major themes in the development of transdenominational evangelicalism and fundamentalism in America from the eighteenth century to the present. This will be a reading seminar involving analyses and discussions of literature (mostly secondary works) important for understanding American evangelicalism as a distinct movement. 3 units. *Wacker*

**272, A-B. The Early Medieval Church.**

A. Selected Readings in Early Medieval Religious Studies

B. Social History of the Church in Europe

Prerequisite: knowledge of Latin. 3 units. *Keefe*

**274A. Philosophies, Sciences, and Theologies of the European Enlightenment: Descartes to Kant.** Western theological thought since the Scientific Revolution, with emphasis on developments and movements that occurred in the seventeenth and eighteenth centuries. Descartes, Locke, Leibniz, Spinoza, Hume, Vico, Lessing, Herder, and Kant. 3 units. *Surin*

**275S. Topics in Early Christian and Byzantine Art.** Consent of instructor required. Not open to students who have taken Art 233S. See C-L: Art History 233S; also C-L: Classical Studies 230S and Medieval and Renaissance Studies. 3 units. *Wharton*

**276. The Sacraments in the Patristic and Early Medieval Period.** A study of the celebration and interpretation of baptism or eucharist in the church orders and texts of the early church writers. 3 units. *Keefe*

**284. The Religion and History of Islam.** Origins and development of the Islamic community and tradition, with particular attention to the religious element. 3 units. *Cornell or Lawrence*

**293. Religious Issues in American History.** A reading seminar devoted to selected topics, problems, and issues in American religion. 3 units. *Joyce, Richey, or Wacker*

#### **For Graduates**

**302. Theology of John Wesley.** Critical examination of selected texts of John Wesley with attention to their social and cultural contexts. 3 units. *Heitzenrater*

**303. The Old Testament in the New: New Testament Writers as Interpreters of Scriptures.** This doctoral seminar examines the ways in which New Testament authors read and interpreted Scripture. Working knowledge of Greek and Hebrew required. 3 units. *Hays*

**304. Aramaic.** A study of the Aramaic portions of the Old Testament and selected passages from the Elephantine and Qumran texts. 3 units. *E. Meyers or Wintermute*

**305. The Septuagint.** A study of the modern critical use of the Greek Old Testament. Prerequisites: knowledge of Greek and Hebrew. 3 units. *Peters*

**309. Hermeneutics.** Consideration of the nature of understanding and of several interpretive methods—such as phenomenological, existential, historical, literary, structural—along with their application to New Testament texts, primarily the parables of Jesus. 3 units. *Staff*

**310. Readings in Judaica.** Selected studies in Jewish material culture and problems in Jewish religious and intellectual history. 3 units. *Bland, E. Meyers, and staff*

**311. Pharisaic Judaism in the First Century.** A reading course in first-century Pharisaic Judaism. 3 units. *Sanders*

**315A. Problems in the Study of Paul.** Justification and the law in light of the chronology of the letters. A series of advanced seminars that combine study of a theological issue with an analysis of a nontheological problem (literary, historical, social). Prerequisite: at least one Greek exegesis course in the Pauline letters. 3 units. *Sanders*

**321. The Theology of Paul: Structure and Coherence.** Review of recent critical discussion of Pauline theology, with particular emphasis on the problem of the structure and coherence of Paul's thought. Reading knowledge of German, as well as some previous work in Greek exegesis of the Pauline corpus is required. 3 units. *Hays*

**322. Nineteenth-Century European Theology.** Protestant theology from Kant to Herrmann. 3 units. *Staff*

**324. Readings in the History of Religion.** An examination of the theories, methods, and purposes of the study of non-Western religions within the Western tradition. 3 units. *Staff*

**329. Readings in Theology and Language.** Sample treatments of religious language in linguistic analysis, hermeneutical theory, literary criticism, liturgical practice, and fundamental theology. 3 units. *Wainwright*

**330. Contemporary Christologies.** A seminar dealing with contemporary Roman Catholic and Protestant Christology. Readings and discussion will focus on theological proposals from major contemporary figures. 3 units. *Wainwright*

**332. System in Theology.** An examination of the various factors that go into the shaping of a systematic theology, followed by a study of several recent and contemporary examples of the genre. 3 units. *Wainwright*

**333. The Doctrine of the Trinity.** Biblical bases, patristic developments, contemporary statements and connections. 3 units. *Wainwright*

**337. Theology of St. Thomas Aquinas.** Intensive reading of the *Summa Theologica* and biblical commentaries. C-L: Medieval and Renaissance Studies. 3 units. *Steinmetz*

**338. Calvin and the Reformed Tradition.** The theological development of John Calvin. A comprehensive examination of his mature position with constant reference to the theology of other reformers. C-L: Medieval and Renaissance Studies. 3 units. *Steinmetz*

**339. The Radical Reformation.** Protestant movements of dissent in the sixteenth century. Special attention will be devoted to Müntzer, Carlstadt, Hubmaier, Schwenckfeld, Denck, Marpeck, Socinus, and Menno Simons. C-L: Medieval and Renaissance Studies. 3 units. *Steinmetz*

**340, 341. Seminar in the New Testament.** Research and discussion on a selected problem in the biblical field. Spring only. 3 units each. *Staff*

**345. Catholic Moral Theology: Its History and Contemporary Issues.** The development of Catholic social and moral theory from a historical and analytical perspective. Study of the Catholic social encyclicals as well as the casuistical tradition. Reading of works by Rahner, Haering, Fuchs, Schuller, McCormick, and Curran. 3 units. *Hauerwas*

**348. Seminar in Theological Ethics.** Philosophical paradigms and the nature of the Christian life. 3 units. *Hauerwas*

**349. History and Historiography of Religion in North America.** An opportunity for advanced students in North American religious studies to deepen their understanding of some of the major questions in the field. Examination of how religious history is actually written—with special attention to the imaginative and moral motivations that enter into that process. 3 units. *Wacker*

**350, 351. Old Testament Seminar.** Research and discussion on selected problems in the Old Testament and related fields. Fall only. 3 units each. *Staff*

**352. Seminar in Christian Theology.** Research and discussion of a selected problem in the systematic field. 3 units. *Staff*

**354. Contemporary American Religion.** A seminar dealing with trends in American religion in the twentieth century; critical assessment of primary paradigms for interpreting American religious change, and examination of major characteristics and issues facing American religion. 3 units. *Carroll*



**355. Islam and Its World.** An introduction to the Qur'an, theological doctrines, Islamic law and its interpretations, the Islamic state, the religious "establishment," Sufism, and the sectarian differences between Sunni and Shi'ite Islam as it is practiced in Cairo. 3 units. *Cornell*

**356. History and Culture of Islamic Cairo.** Focus on the evolution of Islamic Cairo, also emphasizing the basis of Islam's wealth, its agriculture, industry, and trade. C-L: History 356. 3 units. *Cornell*

**360. Special Problems in Religion and Culture.** Intensive investigation of the relations of religion and modernity, using seminal contemporary texts. Topics announced each semester. Consent of instructor required. 3 units. *Staff*

**362. Readings in Old Testament and Semitic Studies.** Selected studies in the Hebrew Bible and the languages and literatures of the ancient Near East. 3 units. *Staff*

**363. Readings in New Testament and Christian Origins.** Selected studies on a theme in modern New Testament scholarship. 3 units. *Staff*

**364. Readings in History of Christianity.** Selected issues in the social, material, and intellectual history of Christianity. 3 units. *Staff*

**365. Readings in Christian Theology and Ethics.** An examination of selected topics of historical and contemporary interest in these fields. 3 units. *Staff*

**366. Readings in History of Religions.** Selected studies in cross-cultural and intercreedal material, together with assessment of the problems they pose for the study of religion. 3 units. *Staff*

**367. Readings in Religion and Culture.** Analysis and discussion of theories and of individual research projects. 3 units. *Staff*

**383. Moral Theology in the Twentieth Century.** Critical and comparative examination of ethical theory as exhibited in the work of selected contemporary theologians. 3 units. *H. Smith*

**389. Christian Ethics and Contemporary Culture.** A study of the interaction between Christian thought and current social theory. 3 units. *Staff*

#### **COURSES CURRENTLY UNSCHEDULED**

205. War and the Christian Tradition

213. Christian Ethics in America

221. Readings in Hebrew Biblical Commentaries

224A. Comparative Semitic I

228. Twentieth-Century Continental Theology

237. History of the Ancient Near East

239. Introduction to Middle Egyptian I

240. Introduction to Middle Egyptian II

242. Life after Death in Semitic Thought

246. Problems in Historical Theology

249. The Lord's Prayer

251. Counter-Reformation and Development of Catholic Dogma

252. Nineteenth- and Twentieth-Century Roman Catholic Theology

- 255. Christians in Religious Dialogue
- 261. Islam in the African-American Experience
- 264. The Sociology of the Black Church
- 271. Christologies of the Early Church
- 274B. Philosophies, Sciences, and Theologies after the European Enlightenment:  
Schleiermacher to Troeltsch
- 277. Judaism in the Greco-Roman World
- 279. Understandings of the Resurrection in Contemporary Thought
- 280. The History of the History of Religions
- 283. Islam and Modernism
- 286. The Second Vatican Council (1962-1965)
- 288. Buddhist Thought and Practice
- 289. Theology and Contemporary Secular Understanding of Human Nature
- 290. Current Problems in Christian Social Ethics
- 291. Historical Forms of Protestant Ethics
- 292. Happiness, Virtue, and Friendship
- 294. Christianity and American Society
- 295. Religion in the American South
- 296. Community, Faith, and Violence
- 297. Philosophical and Theological Discourses on Modernity
- 298. Christian Encounters with Other Religions
- 299. The Christian Understanding of Human Nature and Destiny
- 300. Systematic Theology
- 301. Seminar in Contemporary Christian Ethics
- 304A. Targumic Aramaic
- 312. Pauline Theology
- 314. Judaism and Christianity in the New Testament
- 316S. History of Religions
- 319. The Gospel According to Saint Matthew in Recent Research
- 325. Philosophical Theology I
- 326. Philosophical Theology II
- 327. Philosophical Method in Religious Studies
- 328. Twentieth-Century European Theology
- 331. Eschatology
- 334. Theology and Reform in the Later Middle Ages
- 335. The English Church in the Eighteenth Century
- 342. American Religious Biography

- 343. Readings in Ancient Near Eastern Wisdom Literature
- 344. Zwingli and the Origins of Reformed Theology
- 346. Practical Reason and Personal Identity: Explorations in Narrative
- 347. Hebrew Narrative Art
- 353. Seminar on Text Criticism
- 373-374. Elementary Akkadian
- 380. Existentialist Thought
- 386. Christianity in Dialogue with Other Faiths
- 387. Ethical Method
- 388. Ethics and Medicine
- 397. Readings in North American Religious History
- 398. Colloquium on the Teaching of Religion

## Romance Studies

Professor Mignolo, *Chair* (205 Languages); Professor Bell, *Director of Graduate Studies* (209 Languages); Professors Caserta, Garci-Gómez, Jameson, Kaplan, Moi, Mudimbe, Orr, Pérez Firmat, Stewart, Tetel, and Thomas; Associate Professors Finucci, Longino, Moreiras, Sieburth, and Solterer; Assistant Professors Fischer, Nouzeilles, and Vilarós; Research Associate Professor Keineg; Associate Professor of the Practice and Director of Language Programs Tufts; Assistant Professor of the Practice Caballero and Damasceno; Research Professor Dorfman

The Department of Romance Studies at Duke University has a distinguished tradition of doctoral programs in French and Spanish/Latin American studies, recognized by the outstanding rankings obtained by both the Spanish and French programs in the recent National Research Council study of graduate programs nationwide. Through collaboration with other departments and programs—the Graduate Program in Literature and programs in Women's Studies, Medieval and Renaissance Studies, Canadian Studies, African and Afro-American Studies, and Latin American Studies, among others—numerous opportunities exist for interdisciplinary study and research. Individual interests and disciplinary combinations thus find ample room for development in a rich and diversified institutional setting.

For admission to the program, proficiency in the major language and a balanced and diversified undergraduate education are essential, and knowledge of a second foreign language prior to admission is desirable. The major requirement for admission is a strong college record including 18 semester hours in the major above the intermediate level. Students holding or in the process of acquiring an M.A. are encouraged to apply, but applicants seeking an M.A. only are not admitted. Applicants are required to take the GRE exam and to furnish the department with a sample of their writing in the major language.

## FRENCH STUDIES

### For Seniors and Graduates

**200S. Seminar in French Literature.** Topics to be announced. 3 units. *Staff*

**210. The Structure of French.** Modern French phonology, morphology, and syntax. Readings in current linguistic theory. 3 units. *Thomas*



**211. History of the French Language.** The evolution of French from Latin to its present form; internal developments and external influences. C-L: Medieval and Renaissance Studies. 3 units. *Thomas*

**240. Medieval Narrative.** The language, literature, and culture of premodern France. Topics involve: literacy, fictionality, allegory. Major writers include Chrétien de Troyes, Guillaume de Machaut, Christine de Pizan, Alain Chartier. C-L: Medieval and Renaissance Studies. 3 units. *Solterer*

**256. Modern Literature and History.** The interaction of history and literature in a particular period, for example: the occupation of France, the French Revolution. Problems of interpretation, historical memory, social identity, and narrative. C-L: History 256. 3 units. *Kaplan, Orr, or staff*

**258. The Narrative of Social Crisis.** Realism and naturalism, with special emphasis on Balzac, Flaubert, and Zola. 3 units. *Bell, Jameson, or Orr*

**261. French Symbolism.** Poetry and theories of Baudelaire, Mallarmé, and Rimbaud. Decadence: Lautréamont and Laforgue. 3 units. *Thomas*

**264. Contemporary French Poetry.** The language of poetry. A chronological and theoretical approach to the major poets and movements since 1950. Selections from Bonnefoy, Char, Daive, Deguy, Dupin, Jabès, Jaccottet, Faye, Guillevic, Michaux, Meschonnic, Noël, Oulipo, Ponge, Stefan, Tortel, and others. 3 units. *Orr or Thomas*

**265. French Literature of the Early Twentieth Century.** Emphasis on Gide, Mauriac, Proust, and Colette. 3 units. *Kaplan*

**266. French Literature of the Mid-Twentieth Century.** Emphasis on Malraux, Sartre, Camus, and the *nouveau roman*. 3 units. *Jameson*

**267. Writers, Artists, and Intellectuals in Twentieth-Century France.** Interdisciplinary focus on one figure or one closely connected group of people (writers, artists, filmmakers, intellectuals, and so on); their works studied in their historical and cultural context. 3 units. *Moi*

#### **For Graduates**

**300. Graduate Reading Course.** An intensive course in French to develop rapidly the ability to read French in several fields. Graduate students only. No credit. *Staff*

**315. Medieval Theater and Modernist Theatricality.** A comparative study of the theatrical culture of premodern France and *mises en scène* from 1910-1945. Medieval works will range from mystery, miracle, and carnival plays to legal trials and ordeals. Modernist works will include d'Annunzio, Artaud, Cocteau, Giraudoux, and Claudel. 3 units. *Solterer*

**325. Topics in Renaissance Prose.** Rabelais, Marguerite de Navarre, Montaigne, and others. C-L: Medieval and Renaissance Studies. 3 units. *Tetel*

**326. Topics in Renaissance Poetry.** C-L: Medieval and Renaissance Studies. 3 units. *Tetel*

**347. Topics in Seventeenth-Century French Literature.** Includes genres, authors, movements, and works. 3 units. *Longino*

**348. French Literature of the Seventeenth Century.** The staging of Exoticism in seventeenth-century France. Relations between the suspect categories of history and literature as manifest in the seventeenth-century French theater. Study of the political content of seven plays of Corneille, Molière, Racine, their representations of the orient

in the context of the relations at stake and at play between the court of Louis XIV and the Porte. 3 units. *Longino*

**349. The Epistolary Genre.** Fundamental questions of referentiality, materiality, and communication in writing. The first half is theoretical; the second explores issues raised through a selection of readings across time. Attention to gender and genre considerations. 3 units. *Longino*

**351, 352. Literature of the Eighteenth Century.** Problems of literary history, critical reading, and interpretation, focused on varying topics. 3 units each. *Stewart*

**355. Romantic Literature and French Culture and Politics.** A study of French literature in the context of postrevolutionary society and culture. Readings might include nineteenth-century poetry (Hugo, Desbordes-Valmore), theater (Musset), political or philosophical prose, and historical discourse as well as contemporary critical and historical analyses of the period. 3 units. *Orr*

**356. Topics in Nineteenth-Century French Literature.** Includes genres, authors, movements, and works. 3 units. *Bell, Jameson, Orr, or Thomas*

**366. Topics in Twentieth-Century French Literature.** Includes genres, authors, movements, and works. 3 units. *Kaplan, Moi, or Thomas*

**367. Contemporary French Novel.** A chronological and theoretical approach to the major writers and movements since 1970. Selections from Duras, LeClézio, Sallenave, Modiano, Sollers, Tournier, Oulipo, Yourcenar, and others. 3 units. *Kaplan, Orr, or Thomas*

**368. Structuralism.** An introduction to contemporary French philosophy with a focus on the notions of identity and difference, the human origin of truth and the question of enunciation. The work of Claude Lévi-Strauss or Michel Foucault will be considered as a paradigm. Additional readings might include chapters from Georges Canguilhem, Vincent Descombes, Jean Hyppolite, Alexandre Kojève, Maurice Merleau-Ponty, and Elliott Valenstein. 3 units. *Mudimbe*

**369. Culture and History in Twentieth-Century France.** An interdisciplinary study of one relatively short historical period (the 1950s, the 1960s, the *entre-deux guerres*, etc.). The intellectual and cultural life of a period in its broader social, political, and historical context. 3 units. *Moi*

**370. Topics in French and Francophone Literature.** Concentration on twentieth-century literature. Historical and theoretical approach. Varying topics. Readings include literary and nonliterary texts. 3 units. *Keineg*

**381. Special Topics Tutorial.** Directed reading and research in areas unrepresented by regular course offerings. 3 units. *Staff*

**391, 392. French Seminar.** Topics to be announced. C-L: Medieval and Renaissance Studies. 3 units each. *Graduate faculty*

### Courses Currently Unscheduled

**223. Semiotics for Literature**

**257. Problems of Identity in the Nineteenth-Century Novel**

**263. Contemporary French Theater**

**281. Paradigms of Modern Thought**

**290S. Studies in a Contemporary Figure**

## ITALIAN STUDIES

### For Seniors and Graduates

**240. Seminar in Medieval and Renaissance Studies.** The study and interpretation of medieval and renaissance culture. 3 units. *Finucci*

**283. Italian Novel of the Novecento.** Representative novelists from Svevo to the most recent writers. 3 units. *Caserta*

**284, 285. Dante.** 284: *La Vita Nuova* and a close reading of the *Inferno*. 285: The *Purgatorio* and the *Paradiso* in the light of Dante's cultural world. Special attention will be given to the poetic significance of the *Commedia*. Reading in Italian or English. Prerequisite: for 285, Italian 284 or equivalent. C-L: Medieval and Renaissance Studies. 3 units each. *Caserta*

**381. Special Topics Tutorial.** Directed reading and research in areas unrepresented by regular course offerings. 3 units. *Staff*

## PORTUGUESE STUDIES

### For Graduates

**200S. Seminar in Portuguese Literature.** Topics to be announced. 3 units. *Damasceno*

**202S. Topics in Portuguese and Brazilian Literature and Culture.** Exploration of topics of cultural formation in the Lusophone world that emphasize autochthonous cultural theory. Examples of semester topics: Brazilian cultural theory: modernism to postmodernism; Brazilian popular culture; Portugal post-Salazar. A graduate level course open to juniors and seniors with background in cultural theory. Level of Portuguese required varies with semester topic; consult instructor. 3 units. *Damasceno*

## SPANISH/ LATIN AMERICAN STUDIES

### For Seniors and Graduates

**200S. Seminar in Spanish Literature.** Topics to be announced. 3 units. *Staff*

**210. History of the Spanish Language.** Formation and development. Internal forces and external contributions. C-L: Medieval and Renaissance Studies. 3 units. *Garci-Gómez*

**244. Topics in Twentieth-Century Latin-American Fiction.** Study of various critical problems in the narrative of the area. Focus on one or more major issues, such as the representation of violence, magical realism, *indigenismo*, *novela de la tierra*. Prerequisite: Spanish 106. 3 units. *Moreiras*

**245. Latin-American Poetry.** Focus on major movements and authors. Non-mainstream poetical traditions, such as poetry written in Quechua, oral poetry. Prerequisite: Spanish 106. 3 units. *Moreiras or staff*

**246. Textual Politics in Nineteenth-Century Spanish-American Literature.** The political uses of writing by different social actors. Topics may include ethnic and sexual identities, popular and educated traditions, scientific fictions, modernization, and the role of the writer. 3 units. *Nouzeilles*

**248. Studies in Spanish-American Literature.** Concentration on single authors, genres, movements, or themes. 3 units. *Staff*

**250. Latin-American Film.** Study of Latin-American film through selected films and critical texts. Attention paid to contemporary production given availability, such as the work of Raúl Ruiz, Miguel Littin, Eliseo Subiela. 3 units. *Moreiras and staff*



**251S. Spanish Film.** Cultural critique of Spanish film history. Topics range from the study of the production of a Spanish national identity within a changing global context to the study of a particular movement (for example, *Nuevo cine de mujeres*), period (for example, Civil War), or author (for example, Luis Buñuel or Pedro Almodóvar), to a critical survey of Spanish film from the 1920s to the present. 3 units. *Vilarós*

**260. Paradigms of Modern Thought.** Exploration of modern thought in Latin America. Theories in the social sciences relevant for the humanities (for example, dependency theory, internal colonialism, subaltern studies) will be compared with cultural theories mainly expressed in essays and literature in general and with philosophical thinking grounded in Latin American colonial and postcolonial histories. 3 units. *Mignolo or staff*

#### **For Graduates**

**341. Indigenous Chronicles of the Colonial Period.** Exploration of the relationships between languages, writing, memories, and political practices by focusing on indigenous writers such as Guaman Poman de Ayala, Alvarado Tezozomoc, Pachacuti Yamki, Alva Ixtlilxochitl. Spanish and Portuguese writers will also be included as well as anonymous texts (for example, Huarochiri Manuscripts, Popol Vuh, and Mesoamerican Codices). 3 units. *Mignolo*

**344. Philosophy, Cultural History, and Literature in Latin America.** Special topics. 3 units. *Mignolo*

**345. Contested Spaces: Writing in Nineteenth-Century Latin America.** Questioning teleological constructions of "Literature," "national literature," and the like, this course studies literacy, nonfictional, and pictorial representational practices in nineteenth-century Spanish America and Brazil in their institutional and political setting. 3 units. *Fischer*

**346. Modern Spanish-American Fiction.** Twentieth-century novels and short stories by Borges, Carpentier, Cortázar, Gallegos, García Márquez, Quiroga, and others. 3 units. *Pérez Firmat*

**351. The Origins of Spanish Prose Fiction.** Selected examples of the romance and the novel: *Amadís de Gaula*, Diego de San Pedro's *La Cárcel de amor*, the *Abencerraje*, the *Lazarillo*, Montemajor's *Diana*. C-L: Medieval and Renaissance Studies. 3 units. *Staff*

**353. Cervantes.** The life and works of Cervantes, with special emphasis on his *Quijote*. C-L: Medieval and Renaissance Studies. 3 units. *Staff*

**354. Drama of the Golden Age.** The chief Spanish dramatists of the seventeenth century with readings of representative plays of this period. C-L: Medieval and Renaissance Studies. 3 units. *Staff*

**358. Spanish Lyric Poetry before 1700.** A critical study, based on close reading and discussion, of selected poems of the Middle Ages, Renaissance, and baroque. Special emphasis on the *Razón de amor*, *la Poesía de tipo tradicional*, and *Santillana*; on Garcilaso, San Juan de la Cruz, Fray Luis de León, and Herrera; on Góngora and Quevedo. C-L: Medieval and Renaissance Studies. 3 units. *Staff*

**360. Cross-cultural (Mis)Understanding: Europe and the New World, 1480-1800.** Survey form or in-depth analysis of specific topics: the interrelations between Europe and the New World from the Renaissance to the Enlightenment, and from the last decades of the Inca and Aztec Empires to the wars of independence. The "clash of civilizations" and its implications for the cultural history of the early modern period and for the colonial expansion of the west. 3 units. *Mignolo*

**365. Thinking Independence: From Tupac Amaru to 1898.** Study of the cultural problems surrounding the Latin American wars of independence, and the pre- and post-independence periods. May focus on foundational fictions, political writings, the so-called Romantic period. 3 units. *Moreiras*

**366. Nineteenth-Century Prose Fiction.** Readings by novelists such as Valera, Galdós, Alas, and Pardo Bazán in the light of current critical theory. 3 units. *Sieburth*

**370. Spanish Texts of the Post-Dictatorship: 1975 to Present.** An analysis of some artistic and popular productions that came to light in Spain after Franco's death in 1975. Focus on literary and cinematic texts and other cultural productions such as music and comics. 3 units. *Vilarós*

**371. Cultural History and Theory.** Seminar covering various topics in Latin American cultural history and theoretical production such as: (a) colonial legacies and post-colonial theories; (b) the construction of identities and the critique of cultural colonialism; (c) contemporary critical production in Latin America, from dependency theory to transnationalism and postmodernity. May be repeated for credit. 3 units. *Mignolo or Moreiras*

**375. Hispanic Literature, Mass Culture, and Theory.** A study of Hispanic texts thematizing the effects of mass cultural fictions (serial novels, radio songs, movies) on those who consume them. Fictional works will be juxtaposed with theories on the effects of mass culture and its relationship to canonical literature. Authors of fictional texts include Cervantes, Galdós, Martí, Borges, Marsé, Puig, and Martín-Gaité. 3 units. *Sieburth*

**381. Special Topics Tutorial.** Directed reading and research in areas unrepresented by regular course offerings. 3 units. *Staff*

**391, 392. Hispanic Seminar.** Each semester one of the following topics will be selected for intensive treatment: the Spanish language in America, studies in medieval literature, studies in the literature of the Golden Age, studies in Latin American literature, studies in the Spanish Renaissance and baroque, studies in Spanish poetry, studies in nineteenth-century Spanish literature, and studies in twentieth-century literature. C-L: Medieval and Renaissance Studies. 3 units each. *Staff*

#### **Courses Currently Unscheduled**

**262. The Romantic Movement**

**276. Modern Spanish Drama**

**277. Modern Spanish Novel**

#### **ROMANCE STUDIES**

**210S. Topics in Linguistics.** 3 units. *Staff*

**306. Theories and Techniques of Teaching Foreign Languages.** A survey of approaches to foreign language teaching, an introduction to the theoretical notions underlying current trends, and a language-specific practicum. 3 units. *Caballero and Tufts*

**310. Critical Frameworks.** An introduction to critical theory through a series of interconnected readings organized around a major theoretical approach or issue. Topics may vary. 3 units. *Staff*

#### **Courses Currently Unscheduled**

**218. The Teaching of Romance Languages**

# Slavic, Eurasian, and East European Studies

Edna Andrews, Ph.D., and Vladimir Trembl, Ph.D., *Codirectors*

Since its establishment in 1991, the Center for Slavic, Eurasian, and East European Studies has brought together faculty and students from different departments and schools within Duke University who share a common interest in this region. The center sponsors a variety of visiting speakers, workshops, conferences, and other programs to promote research and the dissemination of knowledge about the former Soviet Union and Central and Eastern Europe.

The center also offers a certificate in Slavic, Eurasian, and East European studies to students enrolled in the Duke Graduate School, the Nicholas School of the Environment, the Law School, the Fuqua School of Business, or the Medical School. The certificate program requires that participating Duke graduate students pursue coursework related to this region in language, literature, economics, history, political science, public policy, law, or business. A student receiving the certificate will have completed significant cross-disciplinary coursework in this area and demonstrated a mastery of at least one related Slavic language.

The center also offers a certificate in Slavic, Eurasian, and East European Studies with a concentration in Russian and East European legal studies. This certificate, inaugurated in 1996, is the first of its kind offered by an American university.

Students seeking either certificate must complete five courses drawn from three different disciplines. Two of the five courses must be from a single discipline, excluding the student's major department. A sixth course of a topical nature will be offered as an interdisciplinary seminar on a yearly basis and will require a major research paper of all certificate candidates. In order to receive either certificate, students will be expected to demonstrate language proficiency in a Slavic or Eastern European language at the intermediate level. Oral and written testing will be required to demonstrate the required level of proficiency.

The center also awards a limited number of foreign language and area studies fellowships for graduate students.

For further information about the center and its programs, please contact the center directors, Professor Edna Andrews or Vladimir Trembl, 302 Languages Building, Box 90260, Duke University, Durham, NC 27708-0260.

## Slavic Languages and Literatures

Professor Mickiewicz, *Acting Chair*; Professor Lahusen, *Director of Graduate Studies*; Associate Professors Andrews and Dobrenko; Associate Professor of the Practice Flath; Assistant Professor Gheith; Associate Professor Emeritus Jezierski; Assistant Professors of the Practice Maksimova and Van Tuyl

The Department of Slavic Languages and Literatures offers graduate work leading to the A.M. and Ph.D. degrees in Russian literature and Slavic linguistics. Beyond the strong commitment to increasing the language proficiency of its students and giving them solid training in research, the faculty of the department are also preparing students in a variety of adjacent fields, such as area and cultural studies, gender studies, history, media and film, and aspects of comparative literature, theory, and translation. Entering students should have had sufficient undergraduate courses in the Russian language to enable them to proceed to more advanced work. Requirements for the A.M. degree may be met by completion of course work and by passing a comprehensive exam. All students must demonstrate advanced knowledge of the Russian language. Reading knowledge of French or German is also required. The A.M. program is expected to take one to two years for completion.

Candidates for the Ph.D. degree in Russian literature must demonstrate extensive knowledge of the subject, competence in another Slavic literature (or in Russian medie-



val literature, or, in special circumstances, in a non-Slavic literature), in literary theory, and reading competence in at least one other Slavic language. Required courses are at least four courses in Russian and Soviet literature, one course in Slavic linguistics, at least two courses in literary theory, of which one is to be taken outside of the department, one course in another Slavic literature, or one course in medieval Russian literature, and two courses (one year of study) of a second Slavic language or demonstration of equivalent.

Students in Slavic linguistics must demonstrate competence in Russian and Slavic diachronic linguistics, and in general linguistic theory. Linguistic students must demonstrate knowledge of one Slavic language from the West and one from the South Slavic area, in addition to Russian. Required courses are at least four courses in Slavic linguistics (including Old Church Slavonic), one course in the history of the West/Slavic languages, one course in the history of the South Slavic languages, at least two courses in general linguistics and semiotics, and one course in Russian literature.

Tutorial work complements formal instruction. Knowledge of both areas will be determined through the preliminary exams, comprised of four written examinations and one comprehensive oral examination. Following successful completion of preliminary exams, students will be expected to write and defend a dissertation based on original research. All Ph.D. candidates are required to teach at least one full academic year as teaching experience is essential in completing one's professional training.

Further information about the graduate programs, including specific requirements, can be obtained from the director of graduate studies.

## **RUSSIAN**

### **For Seniors and Graduates**

**201S. Topics in Comparative Slavic Linguistics.** A cycle of survey courses on the phonology, morphology, and dialects of the Slavic languages. Taught in English. Readings in Russian.

- A. East Slavic
- B. West Slavic
- C. South Slavic
- D. Common Slavic

3 units. *Andrews or Pugh*

**203S. Old Church Slavonic.** Introduction to the language of the earliest Slavic texts. Close study of phonological and morphological systems, reading of texts and discussion. Taught in English. C-L: Religion 229S. 3 units. *Pugh*

**204S. Russian Folklore and Popular Culture.** Work songs and ritual songs, lamentations, riddles, and proverbs. Tales and later forms of popular creation (*chastushki*, anecdotes, urban romance) and their function in Russian culture. Taught in Russian. 3 units. *Staff*

**205. Semiotics and Linguistics.** A survey of modern semiotics, particularly the works of C. S. Peirce and Umberto Eco. Semiotic works directly related to modern linguistic thought and linguistic sign theory. Emphasis on the interdisciplinary aspects of semiotic theory. C-L: English 205. 3 units. *Andrews*

**206. Russian Modernism.** Russian culture between the 1890s and the 1920s, including visual, musical, literary arts, and developments ranging from Neo-Christian mysticism, cosmism, synthesis of the arts, and revolutionary activism. Focus on literary-philosophical thought of that period. Taught in English. 3 units. *Mickiewicz*

**208. Stylistic and Compositional Elements of Scholarly Russian.** Introduction to Russian texts and terminology including business, economics, law, history, political sciences, psychology, linguistics, and literary criticism. Prerequisite: Russian 64 or consent of instructor. 3 units. *Maksimova*

**209. Intensive Advanced Stylistics.** Refinement of stylistic control and range in spoken and written Russian. Emphasis on fluent discursive skills, as well as development of expository prose style. Prerequisites: Russian 195 and 196, or consent of instructor. 6 units. *Maksimova*

**210. Literature and Criticism of Socialist Realism.** The genesis and development of Soviet socialist realism. A survey of Soviet literary theories from Lunacharsky to Ovcharenko, and contemporary Western criticism (for example, K. Clark, R. Robin). A critical approach to the dialogic alternative to monologic literature through literary illustration (selected Soviet literary works from the 1930s to the present day). Taught in English. 3 units. *Lahusen*

**211. Legal and Business Russian.** Introduction to Russian language and culture in the area of legal studies and conducting business in or with Russia and other Commonwealth of Independent States countries. Primary materials include contracts, advertising, and financial documents. Prerequisites: Russian 1 and 2 or consent of instructor. 3 units. *Andrews or Maksimova*

**212S. Proseminar.** Introduction to research methodologies, professional skills (including discussions of teaching), as well as a theoretical basis for students in Slavic linguistics and literature. Mandatory for all graduate students and open to upper-level undergraduates. Team taught; taught in English and Russian. 3 units. *Staff*

**213. Silver Age of Russian Literature.** Poetics of symbolism, acmeism, futurism, imagism, and formalism. Representative world views and critical and artistic methods. Students of Slavic and Russian will read the materials in the original language. 3 units. *Mickiewicz*

**214. Gender, Nationalities, and Russian Literary Traditions.** Russian literature of the nineteenth and twentieth centuries compared with both Western and Eastern literature of the same time period, including questions of national identity. Readings include: Pushkin, Lermontov, Tur, Aitmatov, and Iskander. C-L: Literature 214 and Women's Studies. 3 units. *Gheith*

**230. Soviet Cinema.** History of Soviet film industry from silent to sound period. Overview of major theorist-filmmakers: Eisenstein, Pudovkin, Vertov. Issues of reception, audience, politics, form, national and ethnic identities. Taught in English. 3 units. *Gaines, Jameson, and Lahusen*

**240S. Russian Literary Discourse.** Nineteenth- and twentieth-century Russian literary theory, with close readings in the original. Application to fiction. Taught in English. 3 units. *Lahusen*

**250. Trends in Russian and East European Literary Criticism and Beyond.** The major critical movements in the nineteenth and twentieth centuries in Russia, East-Central Europe, and the West. Authors and theories include the Belinsky school, formalism, Bakhtin, structuralism, semiotics, and psychoanalytic and feminist theory. Taught in English or Russian. Readings in English or Russian. 3 units. *Dobrenko or Gheith*

**257. Law, Culture, and the Russian Legal Tradition.** A study of the development of the Russian legal tradition, with particular emphasis on the historical and cultural factors that have contributed to its emergence, comparing the Russian tradition with the Western legal tradition. How law, lawyers, and legal institutions have been portrayed in Russian popular culture, especially Russian literature. Taught in English. 3 units. *Newcity*

**261. Nineteenth-Century Russian Literature I.** Selected nineteenth-century authors, works, and genres. Authors include Pushkin, Lermontov, Gogol, Turgenev,



Herzen, Goncharov, and Dostoevsky. Taught in English. Readings in Russian. 3 units. *Staff*

**262. Nineteenth-Century Russian Literature II.** Selected authors, works, and genres from the second half of the nineteenth century. Authors include Turgenev, Chernyshevsky, Dostoevsky, Tolstoy, Saltykov-Shchedrin, and Chekhov. Taught in English. Readings in Russian. 3 units. *Staff*

**264. Symbolist Movement in Russia.** History and theory of the philosophy, poetry, prose, and criticism of the Russian variant of the interdisciplinary and international movement. The momentous movement spawning a variety of other creative schools that constitute twentieth-century Russian modernism. Taught in English. Readings in Russian. 3 units. *Mickiewicz*

**265S. Literature of Early Russia.** Works from the eleventh to the seventeenth centuries, including Ilarion's *Sermon on Law and Grace*, *The Tale of Bygone Years*, *The Igor Tale*, *Domostroi*, *Avvakum's Life*. Readings in Russian. 3 units. *Staff*

**266S. The Sources of Modern Russian Literature: The Eighteenth Century.** Development of the major forms of Russian literature, including verse, drama, and the beginnings of the prose tradition. Authors include Kantemir, Lomonosov, Sumarokov, Trediakovsky, Fonvizin, Derzhavin, and Karamzin. Readings in Russian. 3 units. *Gheith*

**269. Women and Russian Literature.** Issues of gender and society in women's writing in Russian from the eighteenth to the twentieth centuries. Both autobiographical writings and prose fiction. Discussions of whether Russian women's writings constitute a tradition and what role these works have played in Russian literature and culture. Taught in English. Readings in Russian. C-L: Women's Studies. 3 units. *Gheith*

**272S. Pushkin and His Time.** Pushkin and the literary revolution around 1830. Prose works (*The Tales of Belkin*, *The Queen of Spades*, *The Captain's Daughter*) and major lyrical poetry. Taught in English. Readings in Russian. 3 units. *Gheith or Van Tuyl*

**273S. Gogol.** Life, works, and criticism. Readings include *Dead Souls*, *The Inspector General*, *Petersburg Tales*, and other short fiction. Readings in Russian. 3 units. *Lahusen*

**275. Tolstoy.** Introduction to life, works, and criticism. Readings include: *War and Peace*, *Anna Karenina*, the shorter fiction, dramatic works and essays. Taught in English. Readings in Russian. 3 units. *Van Tuyl*

**276. Dostoevsky.** Introduction to life, works, and criticism. Readings include: *Crime and Punishment*, *The Idiot*, and *The Brothers Karamazov*. Taught in English. Readings in Russian. 3 units. *Flath, Gheith, or Van Tuyl*

**278. Russian Short Fiction.** The history, development, and discontinuities of Russian short fiction in the nineteenth and twentieth centuries. Authors include Dostoevsky, Vovchok, Leskov, Chekhov, Gippius, and Zoshchenko. Topics include gender, genre, and national identity in historical/cultural context. Taught in English. 3 units. *Gheith*

**279S. Literature of the Former Soviet Republics.** Ukrainian realism of the nineteenth century, futurism, neoclassicism, and the literary struggle of the 1920s; Belorussian literature; Lithuanian psychological prose; the Estonian experimental novel; Georgian literature from Rustaveli to the philosophical novel of the 1970s; the work of Chingiz Aitmatov; Soviet "recent literacy." Taught in Russian. 3 units. *Dobrenko*

**280. Early Twentieth-Century Russian Literature: From Symbolism to the 1920s.** Symbolism, acmeism, futurism, imagism, proletarian literature. Authors include Bely, Sologub, Bryusov, Blok, Vyacheslav Ivanov, Khodasevich, Akhmatova, Mandelshtam, Mayakovsky, Khlebnikov, Gorky, Bogdanov, Gastev. Readings in Russian. 3 units. *Lahusen*



**281. The Soviet 1920s: The Road to a New Synthesis.** The literary struggle of the 1920s; proletarian literature from the Smithy to RAPP, LEF and the fate of the avant-garde, the aesthetic conception of Pereval, the literature of the absurd, Oberiu and the Serapion Brothers. Authors include Kirillov, Gladkov, Babel, Pilnyak, Olesha, Zamyatin, Platonov, Kharmis, and Pasternak. Readings in Russian. C-L: History 242B. 3 units. *Dobrenko or Lahusen*

**282. Socialist Realism: Soviet Literature of the 1930s and 1940s.** The Stalin era of Russian literature, the genesis and development of socialist realism, Soviet literature and the theme of boundaries and war. Authors include Sholokhov, Ostrovsky, Fadeev, Azhaev, Babaevsky, Kochetov, and Simonov. Readings in Russian. 3 units. *Dobrenko or Lahusen*

**283. Post-Stalinist and Contemporary Soviet Literature.** Literature of the thaw after Stalin: the young prose, little realism, new modernism, and rural prose. Authors include Aksyonov, Trifonov, Baranskaya, Bitov, Solzhenitsyn, Rasputin, Shukshin, and Zalygin. Readings in Russian. 3 units. *Dobrenko or Lahusen*

**284. Late- and Post-Soviet Literature.** From the "recovered" avant-garde to the new literature during the Gorbachev era and beyond. The unmasking of Soviet history and its aestheticization. Underground literature and Soviet postmodernism. Authors include Rybakov, Pietsukh, Petrushevskaya, Kuraev, Tolstaya, Viktor Erofeyev, Makanin, Prigov, and Narbikova. Readings in Russian. 3 units. *Dobrenko, Gheith, or Lahusen*

**285. Babel and the Russian-Jewish Cultural Dialogue of the Twentieth Century.** The Jews and the Russian revolution. The Odessa school in the literature of the 1920s. Works include *Red Cavalry*, *Odessa Stories*, and *The Sunset*. Readings in English or Russian. 3 units. *Dobrenko*

**286S. Zamyatin.** The novel *We*, short fiction, and essays. Taught in English. Readings in English or Russian. Not open to students who have taken the former Russian 177S/277S (Zamyatin). 3 units. *Andrews, Maksimova, or Lahusen*

**287S. Platonov.** The novels *Chevengur*, *The Foundation Pit*, and shorter fiction. Taught in English. Readings in English or Russian. 3 units. *Lahusen*

**288S. Bulgakov.** Works include *Master and Margarita*, *The White Guard*, *A Theatrical Novel*, and *The Heart of a Dog*. Readings in English or Russian. 3 units. *Andrews, Maksimova, and staff*

**290. Trifonov, or the Life and Death of the Soviet Intelligentsia.** The Russian and Soviet intelligentsia, its role and historical responsibility, depicted by one of the most visible representatives of the "generation of the sixties." Works include *The Exchange*, *Taking Stock*, *The Long Goodbye*, *Another Life*, *The House on the Embankment*, *The Old Man*. Readings in Russian. 3 units. *Dobrenko*

**297. Russian Poetry.** Focus on nineteenth and twentieth centuries, including the Golden Age and the Silver Age. Authors include Pushkin, Lermontov, Bely, Blok, Akhmatova, Tsvetaeva, Mandelshtam, Pasternak, and Mayakovsky. Taught in English or Russian, according to students' Russian language proficiency. Russian texts. 3 units. *Van Tuyl*

**298. Akhmatova.** The works and times of Anna Akhmatova, the most prominent woman poet in Russian history. Focus on Akhmatova's works and the Russian political and artistic milieu of the 1910s and 1920s, socio-literary issues of later periods. Readings include the lyric poems of 1910-60, *Requiem*, and *Poem Without a Hero*. Readings in Russian. 3 units. *Van Tuyl*

## For Graduates

**301, 302. Elementary Russian.** Introduction to understanding, speaking, reading, and writing. Audiolingual techniques are combined with required recording-listening practice in the language laboratory. 3 units each. *Staff*

**303, 304. Intermediate Russian.** Intensive classroom and laboratory practice in spoken and written patterns. Reading in contemporary literature. Prerequisite: Russian 301, 302 or consent of instructor. 3 units each. *Staff*

**305, 306. Advanced Russian Conversation and Readings.** Nineteenth- and twentieth-century literature in the original. Conducted in Russian. Prerequisite: Russian 303, 304 or consent of instructor. 3 units each. *Staff*

**307. Advanced Russian.** Advanced grammar review with an emphasis on the refinement of oral and written language skills. Development of writing style through compositions and essays. Prerequisite: Russian 306 or consent of instructor. 3 units. *Andrews*

**308. Advanced Russian: Readings, Translation, and Syntax.** Intensive reading and conversation with emphasis on contemporary Russian literary and Soviet press texts. English-Russian translation stressed. Russian media, including television and films. Prerequisite: Russian 307 or consent of instructor. 3 units. *Andrews*

**309, 310. Russian Stylistics and Conversation.** Refinement of stylistic control and range in spoken and written Russian. Emphasis on fluent discursive skills, as well as development of expository prose style. Prerequisites: Russian 307 and 308, or consent of instructor. 3 units each. *Maksimova*

**311S, 312S. Advanced Russian Language and Culture.** Advanced grammar review with additional emphasis on phonetics and conversation. Culture component includes literature, films, museums, and theater performances. (Taught in St. Petersburg in Russian.) Prerequisite: Russian 306 or equivalent. 3 units each. *Staff*

**335. Contemporary Russian Media.** Analytical readings and study of change and development in all the primary forms of former Soviet mass media from 1985 to the present (newspapers, journals, and television). Topics include censorship, TASS, samizdat. Taught in English. Readings in Russian. Prerequisite: Russian 64 or equivalent. 3 units. *Andrews*

**350. Methods in Teaching Russian.** The theory and practice of teaching Russian language to English-speaking students. 1 unit. *Andrews*

**351. Topics in Teaching Methodology.** Application of linguistic principles in the classroom. No prior knowledge of linguistics required. 2 units. *Staff*

**399. Special Readings.** Advanced readings in nineteenth- and twentieth-century Russian literature in the original. 3 units. *Staff*

## Courses Currently Unscheduled

207S. Semantics

277S. Chekhov

## BALTO-FINNIC

### For Seniors and Graduates

**200. Balto-Finnic Linguistics.** Introduction to Balto-Finnic languages with emphasis on the established literary languages, Finnish and Estonian. Analysis of their

phonological and morphological structures. Survey of related nonliterary languages such as Karelian and Vepsian. Taught in English. 3 units. *Pugh*

#### **For Graduates**

**301, 302. Elementary Estonian.** Introduction to understanding, speaking, reading, and writing Estonian. No preliminary knowledge of Estonian necessary. 3 units each. *Pugh*

**303, 304. Elementary Finnish.** Introduction to understanding, speaking, reading, and writing Finnish. No preliminary knowledge of Finnish necessary. 3 units each. *Pugh*

#### **POLISH**

##### **For Seniors and Graduates**

**274S. Topics in Polish Literature.** Selected Polish writers and works in their literary and historical contexts. Includes responses of major European and American writers. Taught in English. 3 units. *Staff*

**287. Introduction to Polish Literature.** Survey of nineteenth- and twentieth-century Polish literature. Taught in English. 3 units. *Staff*

##### **For Graduates**

**301, 302. Elementary Polish.** Introduction to understanding, speaking, reading, and writing in Polish. No preliminary knowledge of Polish necessary. 3 units each. *Lahusen*

**303, 304. Intermediate Polish.** Intensive classroom and laboratory practice in spoken and written patterns. Readings in contemporary literature. Prerequisites: Polish 1 and 2, or consent of instructor. 3 units each. *Lahusen*

#### **SERBIAN AND CROATIAN**

##### **For Graduates**

**301, 302. Elementary Croatian and Serbian.** Introduction to understanding, speaking, reading, and writing Croatian and Serbian. No preliminary knowledge of Croatian and Serbian necessary. 3 units each. *Andrews*

#### **UKRAINIAN**

##### **For Graduates**

**301, 302. Elementary Ukrainian.** Introduction to understanding, speaking, reading, and writing Ukrainian. No preliminary knowledge of Ukrainian necessary. 3 units each. *Dobrenko or Pugh*

## **Sociology**

Professor Land, *Chair* (268 Sociology-Psychology); Professor DiPrete, *Director of Graduate Studies* (341 Sociology-Psychology); Professors Carroll (divinity), K. Cook, P. Cook (public policy and economics), George, Gereffi, Lewin (business), Lin, Myers, O'Barr (cultural anthropology), Simpson, Smith, Spenner, Tiryakian, and Wilson; Associate Professor O'Rand; Assistant Professors Gao, Gold (psychiatry and Aging Center), Jackson, Janoski, Parnell, Thornton, and Zhou; Professors Emeriti Back, Kerckhoff, Maddox, and Preiss; Research Professor Manton (demographic studies); Visiting Professor Gittler

The department offers graduate work leading to the A.M. and Ph.D. degrees in sociology. Entering graduate students should already have completed a minimum of 12 semester hours in sociology and an additional 12 semester hours in related work (e.g.,



other social sciences, statistics, computer science, philosophy, mathematics). Accepted applicants who have not had such preparation may be required to take work beyond the usual requirements. Applicants for admission are required to take the verbal and quantitative aptitude tests of the Graduate Record Examination.

The Ph.D. program requires the student to take five core courses and a primary and additional courses in a secondary specialization. The core courses include: Sociological Theory (206), Social Statistics I and II (207, 212), and two out of three methods courses (208, 214, 215). Specializations (with the associated proseminars indicated in parentheses) include Life Course and Aging Studies (Sociology 221S); Comparative and Historical Sociology (Sociology 222S); Crime, Law, and Deviance (Sociology 223S); Population Studies (Sociology 224S); Organizations, Markets, and Work (Sociology 225S); Medical Sociology (Sociology 227S); Stratification, Mobility, and Labor Force Behavior (Sociology 228S), and Social Psychology 229S. A student entering with only an undergraduate degree and adequate course preparation would need to take fourteen courses to satisfy degree requirements. Up to three courses may be transferred for graduate work taken elsewhere.

Further details concerning the general departmental program, the specialties and their requirements, departmental facilities, the faculty, ongoing research, and stipends available may be obtained from the director of graduate studies.

### For Seniors and Graduates

**206. Sociological Theory.** Structure, foundations, and historical antecedents of recent formulations of such theoretical approaches as phenomenological sociology, exchange theory, critical theory, structuralism, neo-Marxist sociology, sociobiology, and action theory. 3 units. *Tiryakian or Wilson*

**207. Social Statistics I: Basic Concepts and Methods.** Review of descriptive statistics; probability concepts; statistical inference, t-tests, and the analysis of variance. Bivariate correlation and regression, dummy variables, multiple regression, and the analysis of covariance. Stress on applications. Statistical computing using SPSS and other programs. 3 units. *DiPrete or Land*

**208. Survey Research Methods.** Theory and application of survey research techniques in the social sciences. Sampling, measurement, questionnaire construction and distribution, pretesting and posttesting, response effects, validity and reliability, scaling of data, data reduction and analysis. Prerequisite: Sociology 207 or the equivalent. 3 units. *Lin or Smith*

**211S, A-E. Proseminars in Sociological Theory.** Development of sociological thought; systematic sociological theory; interrelations with other social and behavioral sciences.

- A. Background of Sociology
  - B. Formal Aspects of Theory
  - C. Sociology of Knowledge
  - D. Evolutionary Theory and Sociobiology
  - E. Special Topics in Sociological Theory
- 3 units. *Tiryakian or Wilson*

**212. Social Statistics II: Linear Models, Path Analysis, and Structural Equation Systems.** Model specification, review of simple regression, the Gauss-Markov theorem, multiple regression in matrix form, ordinary and generalized least squares, residual and influence analysis. Path analysis, recursive and nonrecursive structural equation models; measurement errors and unobserved variables. Application of statistical computing packages. Prerequisite: Sociology 207 or equivalent. 3 units. *DiPrete or Land*

**213. Social Statistics III: Discrete Multivariate Models.** Assumptions, estimation, testing, and parameter interpretation for the log-linear, logit, logistic, and probit models. Model comparisons; applications of statistical computing packages and programs. Prerequisite: Sociology 212 or equivalent. 3 units. *DiPrete or Land*

**214. Comparative and Historical Methods.** Introduction to the theory of comparative research and analysis in the social sciences with special emphasis on comparative methods, quasi-experimental designs, and case studies. C-L: Political Science 217. 3 units. *Gereffi, Lin, Smith, or Tiryakian*

**215. Basic Demographic Methods and Materials.** Population composition, change, and distribution. Methods of standardizing and decomposing rates, life tables and population models, analysis of data from advanced and developing countries. Applications of computer programs for demographic analysis. Prerequisite: Sociology 207 or equivalent. 3 units. *Myers or Parnell*

**217S, A-F. Proseminars in Social Statistics and Research Methods.** Selected topics in the collection and analysis of social science data.

- A. Discrete and Continuous Models of Measurement
  - B. Hazards Models, Event History Analysis, and Panel Data
  - C. Dynamic Models and Time Series Analysis
  - D. Research Design
  - E. Evaluation Research Methods
  - F. Special Topics in Social Statistics and Research Methods
- 3 units. *DiPrete or Land*

**221S, A-D. Proseminars in Aging and Life Course Analysis.** Selected topics in socialization, human development, status attainment and careers, and the sociology of aging.

- A. Social Structure and the Life Course
  - B. Social Patterns of Personal Development
  - C. Social Gerontology
  - D. Special Topics in Aging and Life Course Analysis
- 3 units. *Jackson, Myers, O'Rand, or Spenner*

**222S, A-G. Proseminars in Comparative and Historical Sociology.** Selected topics in the differentiation and transformation of societies.

- A. Theories of Social Change
  - B. Globalization and Comparative Development
  - C. Societal Transformations and Social Institutions
  - D. Culture, Values, and Ideas
  - E. Social Movements and Political Sociology
  - F. Comparative Social Policies
  - G. Special Topics in Comparative and Historical Sociology
- 3 units. *Gao, Gereffi, Lin, Simpson, Smith, or Tiryakian*

**223S, A-E. Proseminars in Crime, Law, and Deviance.** Selected topics in crime and the institutions of social control.

- A. Theories of Crime Causation
  - B. Human Development and Criminal Careers
  - C. Social Control and the Criminal Justice System
  - D. Sociology of Law
  - E. Special Topics in Crime, Law, and Deviance
- 3 units. *Land, Simpson, or Wilson*

**224S, A-F. Proseminars in Population Studies.** Selected topics.

- A. Population Dynamics
- B. Mortality, Morbidity, and Epidemiology
- C. Urbanization and Migration
- D. Demography of the Labor Force
- E. Demography of Aging
- F. Special Topics in Population Studies

3 units. *DiPete, Land, Manton, Myers, O'Rand, Parnell, or Smith*

**225S, A-H. Proseminars in Organizations, Markets, and Work.** Selected topics in complex organizations, the labor process, and changing occupations.

- A. Basic Concepts, Theories, and Methods
- B. Organizations and Environments
- C. Social Psychology of Organizations
- D. Markets and Market Systems
- E. Careers and Labor Markets
- F. Sociology of Work and Industrial Relations
- G. Special Topics I: Micro Issues
- H. Special Topics II: Macro Issues

3 units. *DiPrete, Gao, O'Rand, Spenner, or Thornton*

**226S, A-G. Proseminars in Social Institutions and Processes.** Selected topics in the sociology of institutions and social and institutional behavior.

- A. Social Psychology
- B. Social Stratification
- C. Political Sociology
- D. Sociology of Religion
- E. Sociology of Science
- F. Sociology of Education
- G. Special Topics in Social Institutions and Processes

3 units. *Staff*

**227S, A-D. Proseminars in Medical Sociology.** Selected topics in medical sociology.

- A. Social Structure and Health
- B. Social Behavior and Health
- C. Organization and Financing of Health Care
- D. Special Topics in Medical Sociology (for example, social epidemiology, stress and coping, health and aging)

3 units. *George, Gold, Jackson, Lin, or Thornton*

**228S, A-F. Proseminars in Stratification, Mobility, and Labor Force Behavior.** Core and special topics in social stratification, including explanations for the existence, amount, and various dimensions of stratification in society; institutions that produce stratification; forces that cause the structure of stratification to vary both over time and across societies; and structures that govern social mobility within and across generations.

- A. Intergenerational Mobility
- B. Social Structure and the Life Course
- C. Social Inequality and the Structure of Poverty
- D. Careers and Labor Markets
- E. Societal Transformation
- F. Special Topics in Stratification and Mobility Research

3 units. *DiPrete, Lin, Spenner, or O'Rand*

**229S. A-F. Proseminars in Social Psychology.** Selected topics in microsociology and social psychology, including social interaction, decision-making, social exchange, group



processes, intergroup relations, self and identity, social structure and personality, social networks and applications in organizations and health care.

- A. Introduction to Social Psychology
  - B. Rational Choice and Social Exchange
  - C. Sociology of Self and Identity
  - D. Group Processes and Intergroup Relations
  - E. Experimental Research: A Practicum
  - F. Special Topics in Social Psychology
- One course. 3 units. *Cook, George, Lin, Jackson, or Spenner*

**234S. Political Economy of Development: Theories of Change in the Third World.** See C-L: Political Science 234S; also C-L: Cultural Anthropology 234S, History 234S. 3 units. *Staff*

**282S. Canada.** See C-L: History 282S; also C-L: Cultural Anthropology 282S, Economics 282S, and Political Science 282S. 3 units. *Staff*

**291. Research Methods in Japanese.** Consent of instructor required. See C-L: Japanese 291; also C-L: Cultural Anthropology 290, History 292, and Political Science 291. 3 units. *Staff*

**298S, 299S. Seminar in Selected Topics.** Substantive, theoretical, or methodological topics. 3 units each. *Staff*

## For Graduates

**301. Methodological Issues in Sociology.** Selected issues central to sociological research and sociological knowledge. Epistemological and ontological matters, differences over what sociological questions are, preferred styles of doing research, standards for adequate and appropriate data, and the language of sociological discourse. Examines selected controversial matters, for example, quantitative and qualitative, ethnomethodology, micro- and macrosociology, survey and comparative-historical research, case study and the case, and feminist research. 3 units. *Smith*

**392. Individual Research in Sociology.** Students will conduct on an individual basis research designed to evaluate a sociological hypothesis of their choice. The process must be completed by preparation of a report on this research in adequate professional style. Prerequisite: Sociology 207, 208 or consent of instructor. 3 units. *Staff*

## COURSES CURRENTLY UNSCHEDULED

### 216. Advanced Methods of Demographic Analysis

## Institute of Statistics and Decision Sciences

Professor West, *Director* (333 Old Chemistry); Associate Professor Lavine, *Director of Graduate Studies*; Professors Berger, Berry, Sacks, and Winkler; Associate Professors Burdick, Johnson, Reckhow, and Wolpert; Assistant Professors Clyde, Higdon, Müller, Parmigiani, Stangl, and Vidakovic

The Institute of Statistics and Decision Sciences offers graduate study leading to the Ph.D. degree in statistics. It also offers the M.S. degree to students pursuing a Ph.D. degree in the institute or in another department at Duke. The institute is a regular teaching and research department of the university that is internationally recognized as a center of research in theoretical and applied statistics. The faculty are active in the areas of Bayesian statistics and decision sciences, statistical computing, and interdisciplinary applications of statistics. These areas of faculty interest are reflected in the course of study for students in the Ph.D. program offered by the institute.

Distinguishing features of graduate study are the opportunity for thorough preparation in Bayesian as well as classical statistics, and research opportunities at the interface between statistics, decision sciences, and statistical computing. The institute also enjoys close working relationships and research collaborations with other departments at Duke, and with the National Institute of Statistical Sciences (NISS), providing opportunities for graduate students to become involved in applied projects.

Requirements for the Ph.D. degree in statistics include study of statistics, probability, statistical computing, decision sciences and related areas; passing a comprehensive examination (covering those topics) given at the end of the first year, and a preliminary examination (covering areas of possible research interest) at the end of the second year; and completing a dissertation written under the supervision of a faculty advisor.

### For Seniors and Graduates

**205. Probability and Measure Theory.** Introduction to probability spaces, the theory of measure and integration, random variables, and limit theorems. Distribution functions, densities, and characteristic functions; convergence of random variables and of their distributions; uniform integrability and the Lebesgue convergence theorems. Weak and strong laws of large numbers, central limit theorem. Prerequisites: elementary real analysis and elementary probability theory. 3 units. *Wolpert*

**207. Probability.** Not open to students who have taken Mathematics 290. Prerequisite: Mathematics 241 or equivalent. See C-L: Mathematics 287. 3 units. *Staff*

**210A. Statistics and Data Analysis for Policymakers.** Elements of statistical inference and estimation including exploratory data analysis, regression, and analysis of variance. Emphasis on public policy applications. Not open to students who have had Mathematics 136 or Statistics 110A, 110B, 112, 113, 114, 210B, or 213. C-L: Public Policy Studies 222. 3 units. *Stangl*

**210B. Statistics and Data Analysis in Biological Science.** Elements of statistical inference and estimation including exploratory data analysis, regression, and analysis of variance. Emphasis on biological science applications. Not open to students who have had Mathematics 136 or Statistics 110A, 110B, 112, 113, 114, 210A, or 213. C-L: Environment 251. 3 units. *Staff*

**213. Introduction to Statistical Methods.** Emphasis on classical techniques of hypothesis testing and point and interval estimation, using the binomial, normal,  $t$ ,  $F$ , and chi square distributions. Not open to students who have had Statistics 114 or Mathematics 136. Prerequisite: Mathematics 103 (may be taken concurrently) or equivalent, or consent of instructor. 3 units. *Staff*

**214. Probability and Statistical Models.** An introduction to applied probability and to the parametric probability models commonly used in statistical analysis. The generation of random variables with specified distributions, and their use in simulation. Mixture models; linear regression models; random walks, Markov chains, and stationary and ARMA process; networks and queueing models. Prerequisites: Mathematics 103 and 104 or consent of instructor. 3 units. *Staff*

**215. Statistical Inference.** Classical, likelihood, and Bayesian approaches to statistical inference. Foundations of point and interval estimation, and properties of estimators (bias, consistency, efficiency, sufficiency, robustness). Testing: Type I and II errors, power, likelihood ratios; Bayes factors, posterior probabilities of hypotheses. The predictivist perspective. Applications include estimation and testing in normal models, exponential families, regression and one-way ANOVA, contingency tables. Hierarchical normal models; model choice and criticism. Prerequisite: Statistics 213 or coregistration in Statistics 214 or consent of instructor. 3 units. *Staff*



**216. Generalized Linear Models.** Likelihood-based inference in generalized linear models (GLIMs). Multiple linear regression, theory, and practice. Elements of Bayesian analyses of linear models. Theory of likelihood-based inference for GLIMs. Factor variables and cross-classified data arrays. Discrete models: binary regressions and simple contingency tables. Introduction to log-linear models. Data analysis: model fitting, model choice, and residuals-based diagnostics. Prerequisites: Statistics 214 and coregistration in Statistics 215 or equivalent. 3 units. *Staff*

**221. Bayesian Inference and Decision.** Not open to undergraduates. See C-L: Business Administration 510. 3 units. *Winkler*

**226. Statistical Decision Theory.** Formulation of decision problems; criteria for optimality: maximum expected utility and minimax. Axiomatic foundations of expected utility; coherence and the axioms of probability (the Dutch Book theorem). Elicitation of probabilities and utilities. The value of information. Estimation and hypothesis testing as decision problems: risk, sufficiency, completeness and admissibility. Stein estimation. Bayes decision functions and their properties. Minimax analysis and improper priors. Decision theoretic Bayesian experimental design. Combining evidence and group decisions. Prerequisite: Statistics 215 or consent of instructor. 3 units. *Staff*

**231. Behavioral Decision Theory.** Not open to undergraduates. See C-L: Business Administration 525. 3 units. *Payne*

**234. Choice Theory.** Not open to undergraduates. See C-L: Business Administration 513. 3 units. *Staff*

**242. Applied Regression Analysis.** Linear regression using both graphical and numerical methods. Model construction, critique, and correction using graphical residual analysis. One-way and two-way analysis of variance; introduction to design of experiments. Use of a standard statistical software package. Applications and examples drawn from various sources, emphasizing the biological and environmental sciences. Prerequisite: Statistics 210B or equivalent. C-L: Environment 255. 3 units. *Staff*

**244. Linear Models.** Multiple linear regression. Estimation and prediction. Likelihood, Bayesian, and geometric methods. Analysis of variance and covariance. Residual analysis and diagnostics. Model building, selection, and validation. Not open to students who have taken the former Mathematics 241. Prerequisites: Mathematics 104 and Statistics 113 or 210. C-L: Mathematics 217. 3 units. *Staff*

**245. Introduction to Multivariate Statistics.** Multinormal distributions, multivariate general linear model, Hotelling's  $T^2$  statistic, Roy union-intersection principle, principal components, canonical analysis, factor analysis. Not open to students who have taken the former Mathematics 242. Prerequisite: Statistics 244 or equivalent. C-L: Mathematics 218. 3 units. *Burdick*

**253. Applied Stochastic Processes.** Not open to students who have taken Mathematics 240. Prerequisite: Mathematics 135 or equivalent. See C-L: Mathematics 216. 3 units. *Staff*

**273. Numerical Analysis.** Prerequisites: knowledge of an algorithmic programming language, intermediate calculus including some differential equations, and Mathematics 104. See C-L: Computer Science 250; also C-L: Mathematics 221. 3 units. *Greenside or Rose*

**282. Optimization Methods.** Optimization techniques useful in decision making. Numerical techniques for nonlinear optimization, with and without constraints; linear and quadratic programming; applications. Other topics, including dynamic programming, optimal control, and stochastic methods, as time permits. Prerequisites: Mathe-



matics 32 and 104 or equivalent, or consent of instructor; knowledge of a computer programming language is helpful but not required. 3 units. *Wolpert*

**290. Statistical Laboratory.** Introduction to statistical thinking, data management and collection, sampling and design, exploratory data analysis, graphical and tabular displays, summarizing data. Introduction to applied work. Computer orientation, statistical packages and operating systems, especially unix on high-speed workstations, and the statistical package S-Plus. Graphics and numerical computing. Examples from various disciplines. 3 units. *Staff*

**291, 292. Independent Study.** Directed reading and research. Consent of instructor and director of graduate studies required. Variable credit. *Staff*

**293. Special Topics in Statistics.** Advanced topics of current interest. Prerequisite: Statistics 213 or consent of instructor. 3 units. *Staff*

**294. Special Topics in Statistics.** Prerequisite: Statistics 213 or consent of instructor. 3 units. *Staff*

**297. Topics in Probability Theory.** Prerequisite: Mathematics 287 or consent of instructor. See C-L: Mathematics 288. 3 units. *Staff*

### For Graduates

**333. Sequential Statistical Analysis.** Bayesian analysis of sequential statistical procedures. Multi-armed bandit problems: sampling costs and decision costs, Bayesian updating, myopic rules, dynamic programming. Contemporary design of clinical trials. At the level of Sheldon Ross, *Introduction to Stochastic Dynamic Programming* and part four of Morris H. DeGroot, *Optimal Statistical Decisions*. Prerequisite: Statistics 215 or equivalent. 3 units. *Berry*

**345. Multivariate Statistical Analysis.** Review of matrix algebra, transformations, and Jacobians. The multivariate normal, Wishart, multivariate *t*, and related distributions are given special emphasis. Topics such as principal components, factor analysis, discrimination and classification, and clustering treated both from classical and Bayesian viewpoints. Additional topics depending on instructor and background of students. Prerequisites: Statistics 215 and Statistics 216. 3 units. *Staff*

**346. Experimental Design and Optimization.** Traditional and modern concepts and techniques in statistical design and experimentation. Industrial experimentation and statistical design in complex, high-dimensional control spaces. Fractional factorial designs and highly fractionated experiments. Response surface methodology. Determination of nonlinearities in response surfaces. Efficient allocation of experimental units to control and treatments, especially with small numbers of expensive units. Bayesian and classical design criteria of optimality. Sequential design and allocation. Prediction from designed experiments. Screening and sensitivity. Data assimilation and tuning. Possible illustrations from studies in semiconductor manufacturing and drug design. 3 units. *Sacks*

**356. Time Series and Forecasting.** Time series data and models: trend, seasonality, and regressions. Traditional models: EWMA, EWR, ARMA. Dynamic linear models (DLMs). Bayesian learning, forecasting, and smoothing. Mathematical structure of DLMs and related models. Intervention, forecast monitoring, and control. Structural change in time series. Multiprocess models and mixture analysis. Multivariate models, constrained and aggregate forecasting, and forecast combination. Applications using computer software. Other topics, including spectral analysis, as time permits. Prerequisite: Statistics 215 or equivalent. 3 units. *West*

**357. Stochastic Processes.** Conditional probabilities and Radon-Nikodym derivatives of measures; tightness and weak convergence of probability measures, measurability and observability. Markov chains, Brownian motion, Poisson processes. Gaussian processes, birth-and-death processes, and an introduction to continuous-time martingales. Prerequisites: Statistics 205 (or Mathematics 290) and Statistics 215 (or Mathematics 136.) 3 units. *Wolpert*

**365. Survival and Reliability Analysis.** Statistical models and techniques useful in the comparative study of lifetime distributions. Censoring mechanisms. Empirical and nonparametric methods of survival-curve estimation, graphical methods. Classical, likelihood, and Bayesian inference in parametric models. Survival regression models: proportional and nonproportional hazards models. Accelerated failure time models. Stochastic mechanisms inducing lifetime distributions. Multivariate failures. Competing risks. Multivariate exponential, and other distributions. Mixtures of failure time distributions. Applications in medicine, engineering, economics. Prerequisites: Statistics 215 and 216. 3 units. *Parmigiani, West, or Wolpert*

**376. Advanced Modeling and Scientific Computing.** An introduction to advanced statistical modeling and modern numerical methods useful in implementing statistical procedures for data analysis, model exploration, inference, and prediction. Topics include simulation techniques for maximization and integration. Prerequisite: Computer Science 221 or equivalent. 3 units. *West*

**386. Noncooperative Game Theory.** See C-L: Economics 315; also C-L: Political Science 315. 3 units. *Moulin*

**390. Statistical Consulting Workshop.** Under faculty supervision, students address and solve consulting problems submitted to ISDS's campus-wide consulting program, and present their solutions to the class. May be taken more than once. Consent of instructor required. 1 unit. *Staff*

**395. Readings in Statistical Science.** Advanced seminar on topics at research frontiers in statistical sciences. Consent of instructor required. 3 units. *Staff*

## COURSES CURRENTLY UNSCHEDULED

**203S. Senior Seminar in Statistics**

**246. Experimental Design**

**381. Nonlinear Regression**

## The Master of Arts in Teaching Program

Rosemary Thorne, *Director*

The Master of Arts in Teaching program (MAT) is designed for talented liberal arts graduates who wish to teach their discipline in secondary schools. The MAT degree requires 36 units of graduate credit, consisting of 18 units (six courses) within the student's discipline, six units (two courses) of MAT-specific education courses, and 12 units devoted to a year-long internship/seminar. The program is open to students with strong undergraduate preparation in English, mathematics, the sciences, or social sciences.

More information on the program is available from the MAT office, 138 Social Sciences Building, Box 90093, Duke University, Durham, North Carolina 27708-0093.

**302. Educating Adolescents.** Focus on understanding the adolescent as a learner. Study of selected theories of adolescent development and theories and principles of



educational psychology emphasizing secondary education. Open only to MAT students. 3 units. *Bingham*

**303. Effective Teaching Strategies.** During the first part of the course students learn general teaching strategies for secondary classrooms such as time management, student behavior management, planning for instruction, instructional presentation, designing effective lessons, feedback, promoting critical thinking skills, and cooperative learning. In the second part students work on methodologies in specific subject area groups. Open only to MAT students. 3 units. *Teasley*

**341. Internship and Reflective Practice.** During fall semester MAT students are placed in supervised internships in local high schools under the direction of trained and certified mentor teachers. The accompanying seminar provides students with an understanding of the adolescent as learner, and opportunities for directed reflection on themselves as teachers and learners, and their students as learners. Open only to MAT students. 6 units. *Staff*

**342. Internship and Content Methodology.** The internship continues through second semester under the supervision and coaching of the mentor. The seminar brings together interns, high school teachers, and content faculty members in specific subject area groups to explore emerging knowledge in the discipline, and the ways that knowledge is best delivered in the high school classroom. Open only to MAT students. 6 units. *Staff*

## The University Program in Toxicology

Professor Levin, *Director of Graduate Studies* (341 Bell Building)

The Duke University Integrated Toxicology Program (ITP) provides students with the theoretical and practical bases for research and teaching in toxicology. This interdepartmental program brings together graduate students, postdoctoral fellows, and faculty members from a variety of scientific disciplines to address toxicological problems from their molecular basis to clinical and environmental consequences. The ITP includes participation of faculty members from the Departments of Biochemistry, Cell Biology, Chemistry, Microbiology, Neurobiology, Pathology, Pharmacology, Psychiatry, Psychology, and the School of the Environment including the Duke Marine Laboratory. Among the principal areas of concentration in the program are environmental toxicology, neurotoxicology, cellular development, and molecular mechanisms of oxidative stress. Duke faculty members have a variety of collaborative research efforts and student rotations are available with scientists at the nearby laboratories of the National Institute of Environmental Health Sciences (NIEHS), the Chemical Industry Institute of Technology (CIIT), and the Environmental Protection Agency (EPA).

Students seeking a Ph.D. in one of the participating Graduate School departments must make initial application to that department. Students who apply initially for graduate study in one of the departments may also be nominated by that department for admission to the program. Such students should list toxicology as their "Special Field" on the application form. It is expected that most students will have a strong undergraduate preparation in mathematics and the physical and biological sciences with demonstrated excellence of performance as judged by grades in coursework and letters of recommendation from former instructors. Each student in the program will take a series of courses in toxicology as well as courses specified by his or her department. A student will be expected to choose a dissertation advisor in his or her department at least by the end of the first two semesters in the program and will normally be expected to begin dissertation research during the third semester in residence. Upon satisfactorily completing all degree requirements in the program and in the department, students will be jointly recommended for the Ph.D. degree.

Further information may be obtained from the director of graduate studies of the Toxicology Program.



## Women's Studies

Professor of the Practice and Adjunct Professor Jean F. O'Barr, *Director* (210 East Duke Building); Professor Carol Meyers, *Associate Director*; Professor Hamilton; Assistant Professor of the Practice Rudy

Graduate and professional students enrolled at Duke University are encouraged to participate in women's studies. Participation includes doing graduate level work in women's studies courses, earning a graduate certificate in women's studies, conducting research on gender-related topics, selecting feminist theory and/or women's studies as a prelim area, writing master's and doctoral theses in feminist scholarship, joining a community of advanced graduate students called Women's Studies Scholars, teaching courses on women, gender, and feminist theories, and attending lectures, seminars, conferences, discussion groups, and other campus events sponsored by Women's Studies.

Graduate students affiliate with the program by submitting, in writing, their intention to take courses and do research on women and gender systems during the course of their studies here. Affiliated students are put on the mailing list and receive calendars, newsletters, lecture notices, and invitations to special events. An annual research conference organized by students affiliated with women's studies is held each year. Information on participation is available in the office.

Graduate work in women's studies takes place both in interdisciplinary seminars and in courses offered through departments. In addition to these possibilities, graduate students are encouraged to develop independent study courses, either with a member of the faculty affiliated with women's studies or in conjunction with the courses offered through the undergraduate curriculum.

Women's Studies offers a certificate to qualified students in A.M., Ph.D., and professional degree programs of the university. To qualify for the graduate certificate, students must pass a minimum of three graduate level courses on women and gender. The graduate core courses in Women's Studies—WST 211S, WST 212S, WST 213S, and WST 214S—are described below. Any one of the four fulfills the core course requirement for the graduate certificate. The second and third courses are chosen by the student from departmental offerings to build on their disciplinary training and demonstrate a breadth and depth of knowledge about women, culture, and society. Students' course plans are approved by the Women's Studies Steering Committee as early as possible in their graduate careers. Students in the Divinity School and those earning an A.M. in Liberal Studies have individualized graduate certificate requirements and need to consult the director. The award of the graduate certificate in women's studies is carried on the student's official university transcript upon completion of the work. A recognition ceremony is held each September for students who have earned the certificate.

### **211. Intellectual and Institutional Foundations of Women's Studies: An Overview.**

An interdisciplinary overview of feminist theorists prior to the twentieth century and of the rise of feminist scholarship in the disciplines. Consideration of the institutional origins and characteristics of Women's Studies and the future contours of feminist scholarship. 3 units. *O'Barr, Rudy, and staff*

**212. Foundations of Women's Studies: The Beginnings.** An interdisciplinary investigation of selected writings by women about the evolution of women's social and cultural positions in primary and secondary sources. Sources include those of antiquity and the Middle Ages although the emphasis is on writings from the Enlightenment through the early twentieth century, including liberal feminist and materialist feminist thought. 3 units. *O'Barr, Rudy, and staff*

**213. Foundations of Women's Studies: From 1960s to the Present.** An interdisciplinary investigation of feminist theories from the mid-twentieth century to the present using primary and secondary sources. Emphasis on the multiplicities of feminist

thought and the incorporation of theorists on a global basis. 3 units. *O'Barr, Rudy, and staff*

**214. Foundations of Women's Studies: Institutional Issues.** An interdisciplinary investigation of the history of the education of women and the evolution of women's studies as an academic discipline. Examination of the relationships between gender and the academy with an emphasis on the changing patterns of higher education, including feminist pedagogy and epistemology. 3 units. *O'Barr, Rudy, and staff*

**300. Advanced Topics in Feminist Studies.** A selected topics seminar on emergent theoretical and empirical questions in feminist scholarship. Prerequisite: must have taken Women's Studies 211, 212, 213, or 214 or have consent of instructor. 3 units. *Staff*

**391, 392. Tutorial in Special Topics.** Directed research and writing in areas unrepresented by regular course offerings. Consent of instructor required. 3 units each. *Staff*

## **COURSES ON WOMEN OFFERED BY DEPARTMENTS AND PROFESSIONAL SCHOOLS**

- Christian Education 255. History of Women in Methodism. *Felton*  
Christian Theology 214. Feminist Theology. *McClintock-Fulkerson*  
Cultural Anthropology 215S. The Anthropology of Gender: Theoretical Issues. *Luttrell, Quinn, Silverblatt, or Starn*  
Cultural Anthropology 216S. Gender, Race, and Class. *Luttrell*  
Economics 208S. Economics of the Family. *McElroy*  
English 269. American Women Writers. *C. Davidson, Pope, or Tompkins*  
English 288. Western in American Culture. *Tompkins*  
English 321. Gender and Power in Renaissance Texts. *DeNeef*  
English 381. Sex/Gender/Representation: Gay and Lesbian Literary Traditions. *Moon and Sedgwick*  
English 381. Ways of Knowing. *Torgoornick*  
French 290S. Studies in a Contemporary Figure: Wittig. *Orr*  
French 391. French Seminar: Autobiography. *Kaplan*  
French 391. French Seminar: The Epistolary Genre. *Longino*  
German 254S. Literature by Women. *Rasmussen*  
German 275S. German Women Writers. *Rasmussen*  
History 221. Gender and the State in Early Modern Europe. *Neuschel*  
History 227-228. Recent United States History: Major Political and Social Movements. *Chafe*  
History 351. Colloquium in Women's History. *Staff*  
Law 335. Family Law. *Bartlett*  
Law 529. Feminist Legal Theory. *Morris*  
Literature 254. Introduction to Feminism. *Moi or Radway*  
Literature 284. Intellectual as Writer: Simone de Beauvoir. *Moi*  
Literature 289. Topics in Feminist Theory. *Moi, Radway, or Tompkins*  
Philosophy 203S. Contemporary Ethical Theories. *Lind*  
Political Science 299. Feminist Political Theory. *Curtis*  
Religion 234. Early Christian Asceticism. *Clark*  
Religion 253. Feminist Theory and the Study of Christianity. *Clark and McClintock-Fulkerson*  
Russian 214. Gender, Nationalities, and Russian Literary Traditions. *Gheith*

## **Zoology**

Professor Rausher, *Chair* (105 Biological Sciences); Professor Uyenoyama, *Director of Graduate Studies* (107-B Biological Sciences); Professors Barber, Crowder, Forward, Gillham, H. Nijhout, Klopfer, Laurie, Livingstone, McClay, Nicklas, H. Nijhout, Simons, Staddon, Terborgh, Tucker, Vogel, and Ward; Associate Professors Brandon, Nowicki, Rittschof, Roth, and K. Smith; Assistant Professors Crenshaw, Cunningham, Fehon, McShea, Morris, and Wilson; Professors Emeriti Bailey, Bookhout, Fluke, Gregg, Schmidt-Nielsen, and Wainwright; Adjunct Professor Schmidt-Koenig; Adjunct Associate Professor M. Nijhout

The Department of Zoology offers a variety of programs tailored to individual needs of students seeking the Ph.D. degree. Ordinarily, the department does not admit students who wish to obtain only a master's degree, although this degree may be taken en route



to the Ph.D., or by those who leave the doctoral program. Students and their advisory committees plan appropriate courses of study, and the department has no formal course requirements beyond research experience with different faculty members. Details on other requirements may be found in the *Handbook for Zoology Graduate Students*, available from the director of graduate studies in the department.

Students in the department may undertake studies in animal behavior, ecology, microevolution, macroevolution, developmental biology, genetics, cell biology, population biology, systematics, biomechanics, functional morphology, animal physiology, and marine biology.

There is a high level of interaction among the various areas of biology and other programs. Faculty members in Zoology participate in the University Programs in Genetics, Cellular and Molecular Biology, Integrative Biology, and Neurobiology. There is an especially strong relationship between the Departments of Botany and Zoology particularly in the areas of ecology, evolution, and systematics. There are also strong relations with the Departments of Biological Anthropology and Anatomy (primatology, phylogenetic systematics, macroevolution), Geology (limnology, paleontology), Mathematics (theoretical biology), Psychology (behavior), and the School of Engineering (biomechanics).

Thus, all students are urged to search widely in both the *Bulletin of Duke University: Undergraduate Instruction* and the *Bulletin of Duke University: Graduate School* for information about the intellectual resources of the university. Special attention should be given to announcements of the Departments of Biochemistry, Biological Anthropology and Anatomy, Botany, Cell Biology, Chemistry, Cultural Anthropology, Geology, History, Immunology, Mathematics, Microbiology, Pharmacology, Philosophy, Psychology, Sociology, and Zoology; announcements of the School of Engineering and the School of the Environment should also be consulted.

#### For Seniors and Graduates

The L suffix on a zoology course number indicates that the course includes a laboratory.

**201L, S. Animal Behavior.** Survey of past developments and current controversies in animal behavior. Extensive readings, followed by individual experimental or descriptive projects in the laboratory or field (or Primate Center). Recommended background: Biology 25L, Biology 151L, and statistics, or equivalents. 4 units. *Klopper*

**203L. Marine Ecology.** Factors that influence the distribution, abundance, and diversity of marine organisms. Course structure integrates lectures, field excursions, and independent research projects. Topics include characteristics of marine habitats, adaptation to environment, species interactions, biogeography, larval recruitment, rocky shores, marine mammals, fouling communities, tidal flats, beaches, subtidal communities, and coral reefs. Four units (fall and spring); six units (summer). (Given at Beaufort.) Prerequisite: none; suggested—introductory ecology, invertebrate zoology, or marine botany. C-L: Environment 219L and Marine Sciences. Variable credit. *Staff*

**206S. Controversies in Biology.** A contentious theme for reading, discussion, and an individual or joint paper. Illustrative past topics: the nature of the creative process, causality in biological thought, the lack of political impact of many scientific developments. Open to nonmajors. 3 units. *Klopper*

**213L. Behavioral Ecology.** How ecological factors shape foraging, mating, aggressive, and social behavior. Laboratory experiments and field observations from the Outer Banks environment. Independent projects and seminars. (Given at Beaufort.) Prerequisite: introductory biology (Biology 25L). C-L: Environment 223L and Marine Sciences. 6 units. *Rubenstein (visiting summer faculty)*



**215. Tropical Ecology.** Ecosystem, community, and population ecology of tropical plants and animals with application to conservation and sustainable development. Prerequisite: a course in general ecology. C-L: Botany 215 and Environment 217. 3 units. *Terborgh*

**216L. Limnology.** Lakes, ponds, and streams; their origin, development, geochemistry, energy balance, productivity, and the dynamics of plant and animal communities. Laboratory includes field trips. Offered biennially. Prerequisites: Biology 25L, Chemistry 12L, Mathematics 32, and physics; or equivalents; or consent of instructor. 4 units. *Livingstone*

**229L, S. Paleocology.** Global change over the last two million years. Prerequisites: two semesters of biology or geology; and one semester each of calculus, chemistry, and physics; or consent of instructors. C-L: Botany 229L. 3 units. *Bush, Clark, and Livingstone*

**234S. Problems in the Philosophy of Biology.** Consent of instructor required. See C-L: Philosophy 234S; also C-L: Botany 234S. 3 units. *Brandon*

**237L. Systematic Biology.** Theory and practice of identification, species discovery, phylogeny reconstruction, classification, and nomenclature. Prerequisite: Biology 25L or equivalent. C-L: Botany 237L. 3 units. *Staff*

**244. Principles of Immunology.** Prerequisites: Biology 119 and Chemistry 151L or equivalents. See C-L: Immunology 244. 3 units. *Kostyu, McClay, and staff*

**249. Comparative Biomechanics.** The structure and operation of organisms in relation to the mechanics of solids and fluids, including readings from the primary literature. Prerequisites: Mathematics 31 and Physics 51L or equivalents. 3 units. *Vogel and Wainwright*

**258L. Introduction to Modern Microscopy.** A hands-on approach to teach students how to use the new microscopy with an emphasis on the principles underlying their application. 3 units. *Crenshaw*

**263. Molecular Genetics of *Drosophila* Development.** Consent of instructor required. See C-L: Cell Biology 263; also C-L: The University Program in Genetics 263. 2 units. *Fehon, Kiehart, and Wharton*

**267L. Community Ecology.** Mechanisms that determine the distribution and abundance of plants and animals: geology, climate, physiography, soils, competition, predation, and history. Lectures focus on ecological principles. Seminars and weekend field trips. Prerequisites: an introductory ecology course and consent of instructor. C-L: Botany 267L. 3 units. *Clark*

**269. Advanced Cell Biology.** Structural and functional organization of cells and their components with emphasis on current research problems and prospects. Prerequisite: introductory cell biology or consent of instructor. C-L: Botany 269, Cell Biology 269, and Immunology 269. 3 units. *Siedow and staff*

**274L. Biology of Marine Invertebrates.** Systematic survey of the principal marine invertebrate taxa, with emphasis on structure, function, behavior, and ecology. Field trips and independent projects. Not open to undergraduates who have taken Biology 176L. (Given at Beaufort.) Prerequisite: introductory biology (Biology 25L). C-L: Environment 297L and Marine Sciences. 6 units. *Dimock (visiting summer faculty)*

**281. DNA, Chromosomes, and Evolution.** The relationship of chromosome and DNA-sequence organization with evolution; karyotype changes and speciation; repetitive DNA, split genes, transposable elements, and evolutionary mechanisms; phylogeny reconstruction; evolution of mitosis and the chromosome cycle. Prerequisite: an intro-

ductory course in genetics or cell or molecular biology, or consent of instructor. C-L: The University Program in Genetics 281. 3 units. *Laurie and Nicklas*

**283. Molecular Genetics of Organelles.** Genetics, biochemistry, and molecular biology of the organelles of eukaryotic cells, and cellular symbionts. Emphasis on recent literature. Prerequisite: introductory genetics. C-L: Botany 283 and The University Program in Genetics 283. 3 units. *Boynton (botany) and Gillham*

**284. Molecular Population Genetics.** Theoretical and computational basis of evolutionary biology at the sequence level. Models of nucleotide and amino acid substitution; distance measures; distance methods for phylogeny reconstruction; tests of neutrality, adaptive selection, and hitchhiking; methods for distinguishing between common ancestry and adaptation; case histories of molecular evolution. For graduate students and upper-level undergraduates with coursework in genetics or evolution or mathematics. 3 units. *Uyenoyama*

**286. Evolutionary Mechanisms.** Prerequisites: Biology 25L and 120 or equivalents. See C-L: Botany 286; also C-L: The University Program in Genetics 286. 3 units. *Antonovics (botany), Rausher, and Uyenoyama*

**287S. Macroevolution.** Evolutionary patterns and processes at and above the species level; species concepts, speciation, diversification, extinction, ontogeny and phylogeny, rates of evolution, and alternative explanations for adaptation and evolutionary trends. Prerequisite: Biology 25L or equivalent. C-L: Biological Anthropology and Anatomy 287S and Botany 287S. 3 units. *Roth*

**288. Mathematical Population Genetics.** Principles of formulation and analysis of dynamic mathematical models of genetic evolution. Rotating topics include: mating systems, sex ratio, stochastic processes. Prerequisites: calculus; statistics and linear algebra recommended. C-L: The University Program in Genetics 288. 3 units. *Uyenoyama*

**289L. Methods in Morphometrics.** Techniques for the acquisition and analysis of quantitative data for describing and comparing biological form. Topics include: image capture and analysis, two- and three-dimensional digitization, and multivariate and geometric techniques such as allometric analysis, outline and landmark-superposition methods, and deformation models. Background in statistics and linear algebra recommended. 4 units. *Mercer*

**290. Pattern and Process in Vertebrate Development.** Prerequisites: course in comparative or human anatomy and consent of instructor. See C-L: Biological Anthropology and Anatomy 290. 3 units. *Smith*

**291. Mathematical Biology.** An introduction to mathematical biology. Topics drawn from population biology, epidemiology, enzyme kinetics, chemotaxis, and developmental biology. Emphasis on robust methods for obtaining useful information from biological models. Methods include graphical, geometric, perturbation, and stability analysis. Prerequisites: Mathematics 103 or equivalent and consent of instructor. 3 units. *Mercer*

**295S, 296S. Seminar.** Topics, instructors, and course credits announced each semester. Variable credit. *Staff*

### For Graduates

**325S, 326S. Developmental, Cellular, and Molecular Biology Seminar.** Weekly presentations in developmental, cellular, and molecular biology topics by students, faculty, and invited speakers. Consent of instructor required. 1 unit each. *Staff*

**353, 354. Research.** To be carried on under the direction of the appropriate staff members. Hours and credit to be arranged. C-L: Marine Sciences. Variable credit. *Staff*

**360, 361. Tutorials.** An approved academic exercise, such as writing an essay or learning a research skill, carried out under the direction of the appropriate staff members. Hours and credit to be arranged. Variable credit. *Staff*

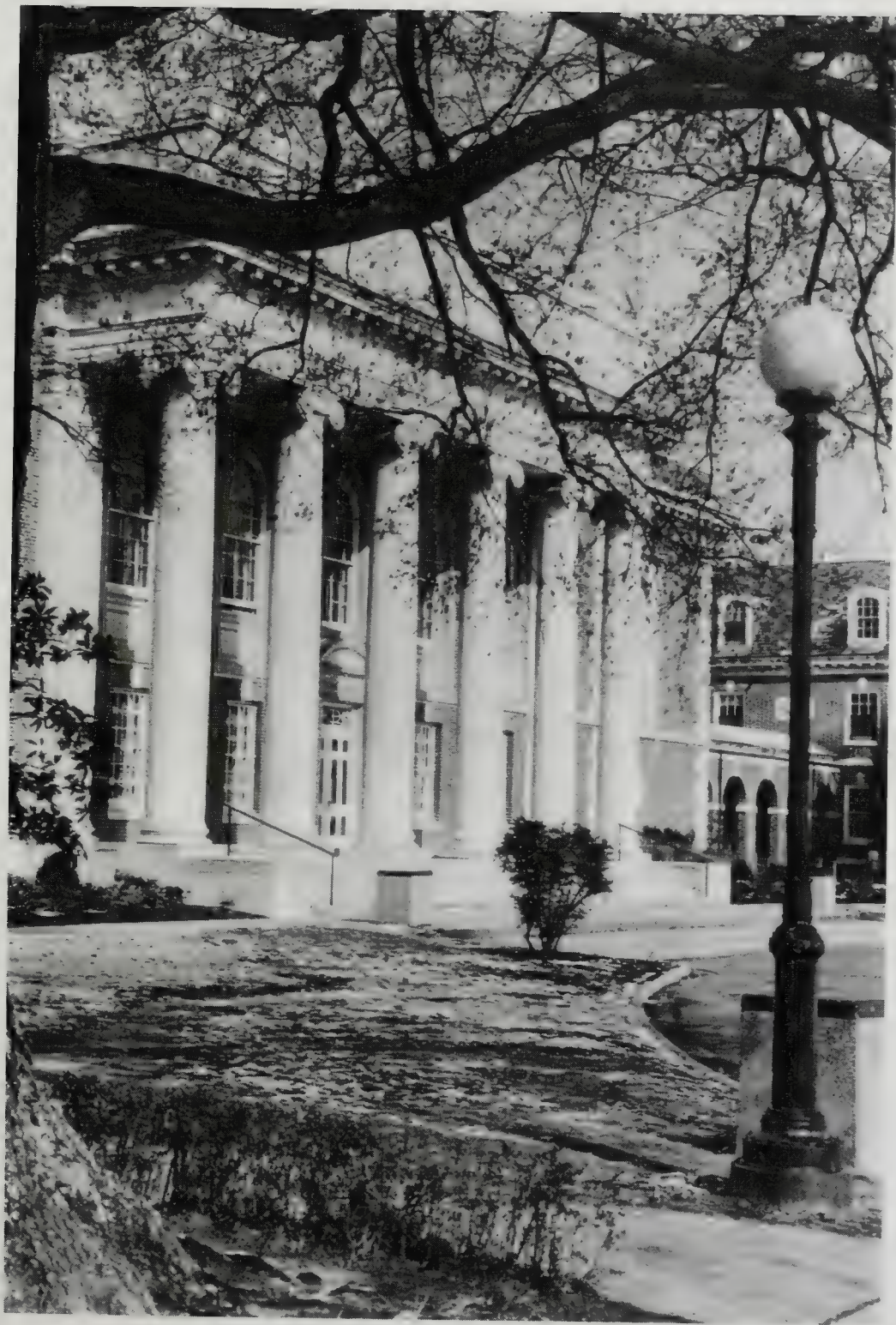
**364. Ungraded Research.** To be carried on under the direction of the appropriate faculty members. Hours to be arranged. Variable credit. *Staff*

**COURSES CURRENTLY UNSCHEDULED**

**222L. Entomology**

**355, 356. Seminar**





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*Special Study Centers, Programs, and  
Opportunities*





## **Center for the Study of Aging and Human Development**

The center is a multidisciplinary program devoted to research, training, and clinical activities in gerontology and geriatrics. Although the center does not offer degrees, the varied programs, research laboratories, and clinical settings provide a context and resource for undergraduate and graduate students and for health professionals with special interests in adult development and aging. The center conducts multidisciplinary, two-year programs for postdoctoral fellows interested in focused training for independent research on many varied aspects of aging and adult development. Resources of this all-university program include data from two longitudinal studies, a wide range of archival data of special interest to social scientists, a human subjects registry, and the center's basic and applied research laboratories. A division of geriatrics coordinates research, training, and services related to the care of older adults. Undergraduate and graduate students of the university are welcome to inquire about participation in all programs at the center. Inquiries should be addressed to Harvey Jay Cohen, M.D., Director, Duke University Center for the Study of Aging and Human Development, Box 3003, Duke University Medical Center, Durham, North Carolina 27710.

## **Center for Demographic Studies**

The Center for Demographic Studies promotes the pursuit of advanced degrees in sociology or economics with a specialization in population studies. Its facilities include a population library, the Joseph J. Spengler Collection of publications and research materials, and extensive data resources. The center's program provides opportunities for direct student participation in ongoing research projects. A federally supported predoctoral and postdoctoral training program on the social and medical demography of aging is coordinated by the center. Inquiries for training and research opportunities may be directed to Dr. George C. Myers, Director, Center for Demographic Studies, Duke University, Box 90408, Durham, North Carolina 27708-0408.

## **Center for Documentary Studies**

This interdisciplinary center for research, teaching, and the dissemination of documentary work is dedicated to encouraging and supporting the work of photographers, filmmakers, historians, journalists, novelists, and others who work by direct observation and participation in the lives of individuals and communities. The center's graduate-level research focuses on a collaborative research project entitled "Behind the Veil: African American Life in the Jim Crow South," directed by professors William Chafe and Raymond Gavins of the history department. The center emphasizes documentary fieldwork and encourages students to become engaged in documentary projects in communities outside the university. Graduate



students may participate in a variety of courses and programs that the center offers under the auspices of several Duke departments including history, public policy studies, education, and english. Center-sponsored projects offer a limited number of assistantships to graduate students in the arts and humanities. For more information contact Iris Tillman Hill, Director, Center for Documentary Studies, Lyndhurst House, 1317 West Pettigrew Street, Box 90802, Durham, North Carolina 27708-0802.

## **Center for International Development Research**

The Center for International Development Research (CIDR) is one of several active research and training facilities in Duke's Terry Sanford Institute of Public Policy. The center's core faculty are drawn from a variety of academic disciplines including economics, political science, environmental studies, public policy, history, and sociology. The faculty's teaching, research, and consulting experience are international in scope, encompassing a broad range of development policy issues.

The center offers both long- and short-term programs of study, including the Program in International Development Policy (PIDP), which provides from one semester to two years of training in policy analysis and problems related to sustainable development. Professionals with several years' experience as practitioners or applied researchers in a development-related field are eligible to apply to the program. Participants in the program—known as PIDP fellows—pursue either a certificate or A.M. in International Development Policy while at Duke.

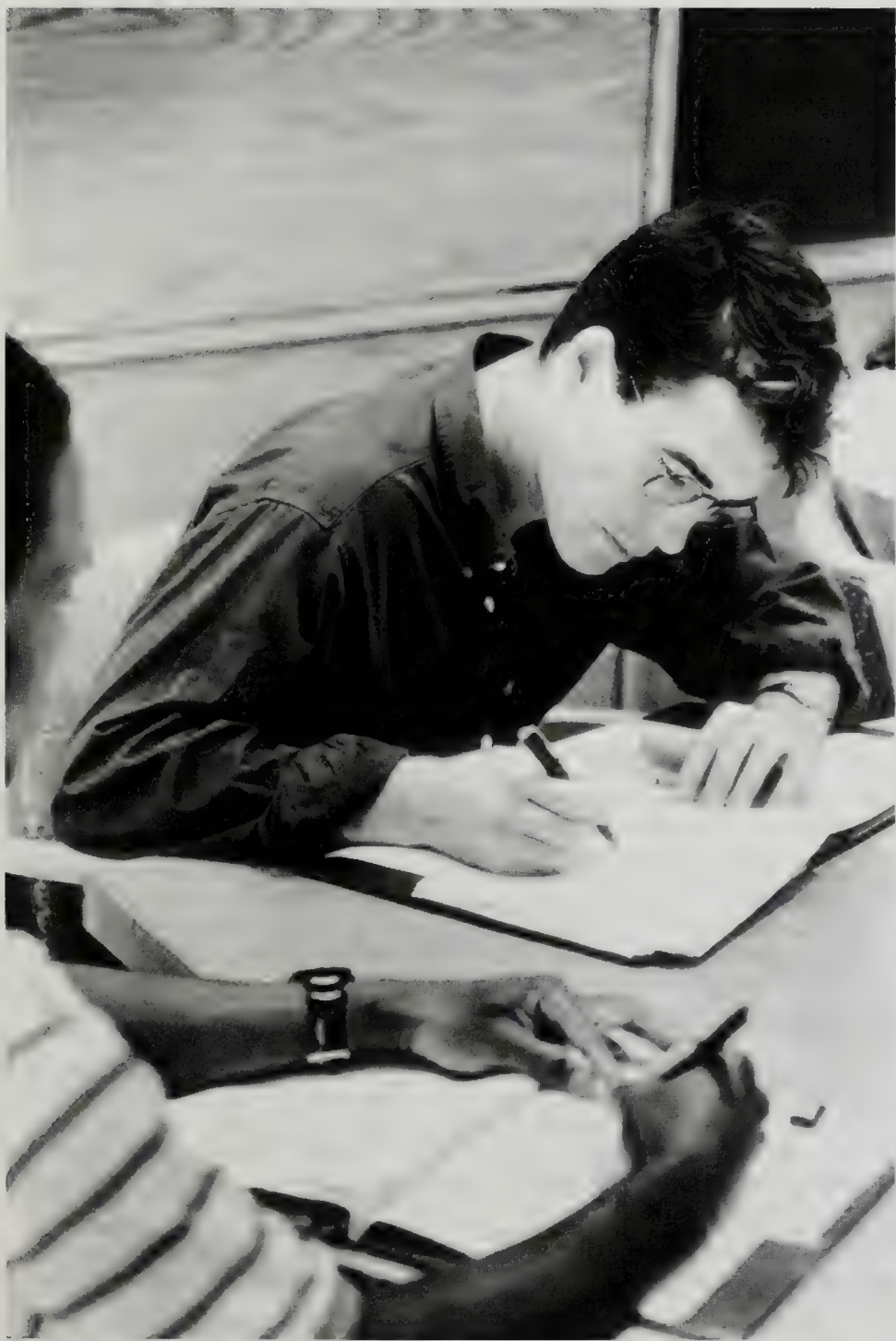
The center also sponsors short-term professional education programs, conferences, and a monthly "Rethinking Development Policy" speaker series. In addition to faculty publications, the center's Working Papers series provides a forum for new research on key issues in development policy. For additional information, contact the Center for International Development Research, Duke University, Box 90237, Durham, North Carolina, 27708-0237.

## **Center for International Studies**

This center is one of the major coordinating units in the university which stimulates dialogue and research on global issues. The center sponsors a number of faculty committees on major world regions and on transnational analytical themes. As a U.S. Department of Education National Resource Center in International Studies, the center funds a series of courses on global issues of interest to graduate students. These courses, provide opportunities for teaching assistantships for graduate students in the humanities and social sciences. In addition, the center sponsors a program of awards for graduate students who wish to undertake research abroad. For more information contact Dr. Josefina C. Tiryakian, Senior Coordinator of Programs, Center for International Studies, 2122 Campus Drive, Box 90404, Durham, North Carolina 27708-0404.

## **Center for Mathematics and Computation in Life Sciences and Medicine**

The Center for Mathematics and Computation in Life Sciences and Medicine was established in 1986 to meet the growing need for quantitative methods in the understanding of complex biological and medical systems. Many important research problems, both basic and applied, now require the collaboration of experimental biologists, mathematicians, and computer scientists. The purpose of the center is to facilitate such collaborations between researchers in different departments and institutions, as well as between academic and industrial laboratories. Address inquiries to Professor Michael C. Reed, Director, Center for Mathematics and Computation in Life Sciences and Medicine, Department of Mathematics, Duke University, Box 90320, Durham, North Carolina 27708-0320.





## Center for Tropical Conservation

The Center for Tropical Conservation was established to focus the activities of Duke faculty who share a common concern for the human and environmental problems of the tropics. Disciplines represented include anthropology, botany, economics, forestry, history, political science, and zoology. The center serves to sponsor interdisciplinary courses, seminars, and workshops; to promote and coordinate research relevant to the sustainable development of natural resources; and to gather and disseminate pertinent information. Inquiries should be addressed to Professor John W. Terborgh, Director, Center for Tropical Conservation, 3705-C Erwin Road, Simons Building, P.O. Box 90381, Durham, North Carolina 27708-0381.

## Program for the Study of Developed Shorelines

The Program for the Study of Developed Shorelines was established in recognition of a critical need for both academic programs and geological research on national coastal issues. The goal of the program is promotion of research, education, and publication concerned with oceanic shorelines already under development. A limited number of graduate research fellowships are available to both M.S. and Ph.D. candidates and postdoctoral support is available for individuals involved in appropriate research. The program is centered both within the Department of Geology and the School of the Environment. Fellows supported by the program must satisfy all departmental requirements. For more information contact Professor Orrin Pilkey, Director, Program for the Study of Developed Shorelines, Department of Geology, Duke University, Box 90228, Durham, North Carolina 27708-0228.

## Council on Latin American Studies

The Council on Latin American Studies oversees and coordinates graduate education in Latin American studies, and promotes research and dissemination of knowledge about the region. Chaired by Professor Daniel James, the council is made up of Latin Americanist faculty and staff members representing Arts and Sciences disciplines as well as the professional schools. The council sponsors a speakers series which provides a forum for presentations by visiting Latin Americanists from throughout the U.S. and overseas, as well as Duke and UNC faculty and graduate students. Each year the council also cosponsors a number of conferences and other special events, including the annual Latin American Labor History Conference.

For additional information about Latin American Studies at Duke and courses with Latin American content offered by departments, see the section on "Courses of Instruction" in this bulletin.) Graduate students interested in obtaining a certificate in Latin American Studies should contact the Council Chair or Program Coordinator, Council on Latin American Studies, 2114 Campus Drive, Box 90255, Duke University, Durham, NC 27708-0255, telephone (919) 681-3980, email: las@acpub.duke.edu.

## Office of Research Support

The Office of Research Support, located in 02 Allen Building, provides assistance to faculty members who seek external funding for research and other projects and to graduate students who seek graduate fellowships. The office houses a library of reference materials dealing with external funding. The ORS library contains fellowship and grant information for faculty, postdoctoral fellows, and graduate students from a variety of sources. It is arranged primarily by discipline and also includes such categories as "study abroad" and "dissertation support." Graduate students may take advantage of the resources of the office by browsing through the information on their own or they may make an appointment to talk with the staff by calling 684-3030. The office also



reviews all grant proposals submitted to external funding sources, negotiates with the agency, and processes the award. Office hours are from 8:30-5:00 daily.

## **Center for Resource and Environmental Policy Research**

The Center for Resource and Environmental Policy Research at Duke University is committed to the study of public policies on natural resources and the environment. Housed in the Nicholas School of the Environment, the center promotes and coordinates research by faculty and students in the School of the Environment and other schools and departments at Duke and at other universities to provide a center of excellence for the analysis of contemporary resource and environmental policy issues. The center offers a forum for the examination of public and private responsibilities for natural resources and the environment and provides a means to link the specialized knowledge of academia with the information needs of government, industry, and international agencies.

Among the subjects now under study are corporate environmental policies, valuation of forests and other natural resources, forest policy, and management of tourism in the United States and in developing countries.

For further information, write to the Center for Resource and Environmental Policy Research, Duke University, Box 90328, Durham, North Carolina 27708-0328.

## **Center for Teaching and Learning**

The mission of the Center for Teaching and Learning is to work with faculty and graduate students on better understanding teaching and learning processes, with the aim of using that knowledge and insight to further enhance teaching and learning in their particular disciplines. For graduate students and younger faculty who are beginning their professional careers, this may include helping them to make a smooth transition into the demanding culture of a research university, where they are expected to be at once effective teachers, productive scholars, and valuable colleagues. For senior faculty, at mid-career or beyond, the focus turns to discovering how to assist them in dealing with the pressures of a rapidly changing teaching and learning environment. These pressures result from challenges from traditional pedagogy, as well as demands for mastering ever-changing information technologies. Additionally, the center seeks to address issues facing administrators, such as students who are dissatisfied with traditional teaching methods, parents who want the best education for their tuition dollars, and the general public who are perplexed by how to ensure the most effective balance between teaching and research priorities in a research university.

The center is currently concentrating its efforts in providing support in six areas: (1) curriculum development through assistance with course design/redesign; (2) classroom applications of instructional technology through workshops and individual consultations; (3) preparing graduate students for their roles as teachers; (4) adding to the campus-wide dialogue on issues of diversity in the classroom through an imaginative program funded by the New York Times Foundation; (5) engaging graduates in the dialogue about teaching and learning at Duke through interactive theater programs in residence halls; and (6) facilitating a new series of informal faculty discussions about the nature of and issues associated with assignments and grading in undergraduate courses. The center also offers six fellowships annually for advanced graduate students.

For further information, contact the Center for Teaching and Learning, 404 Old Chemistry Building, Box 90236, Duke University, Durham, NC 27708.

## **Organization for Tropical Studies**

Duke University is a member and the administrative home of an international consortium which provides leadership in education, research, and the wise use of natural resources in the tropics. The basic OTS course, Tropical Biology: An Ecological

Approach, lasts for eight weeks (January to March and again in June to August). OTS also offers Tropical Plant Systematics (eight weeks), Tropical Conservation Biology (four weeks), and Tropical Biodiversity (three weeks). All OTS courses are at the graduate level, take place in Costa Rica, and are offered in the summer (except as noted above). Several of these courses are also offered in Spanish for Latin Americans. OTS has a program of research support for thesis research conducted at any of its three biological field stations in Costa Rica.

Applications for courses and research support as well as course announcements are available from either of Duke's two OTS board representatives (Dan Richter in the School of the Environment, and Mark Bush in Botany), one of whom should sign off on the applications. Materials are also available from the OTS office at 410 Swift Avenue (684-5774).

## Center for Research on Women

The Duke-UNC Center for Research on Women was founded in 1982 as a collaborative endeavor between Duke University and the University of North Carolina at Chapel Hill to promote women's studies scholarship and research throughout the tri-state area of North Carolina, South Carolina, and Virginia; to support curriculum development in women's studies; and to disseminate women's studies research and information throughout the South. The center's principal focus is to explore the interacting dynamics of gender, race, and class, with a particular emphasis on the American South.

The center offers a limited number of unpaid visiting scholar affiliations, and opportunities for graduate student internships. Regular activities include an annual visiting lectureship series; a working paper series, *Southern Women: The Intersection of Race, Class and Gender*, published jointly with the research center at Memphis State University; the publication of a biannual newsletter, *Branches*; and sponsorship of conferences, colloquia, and community events.

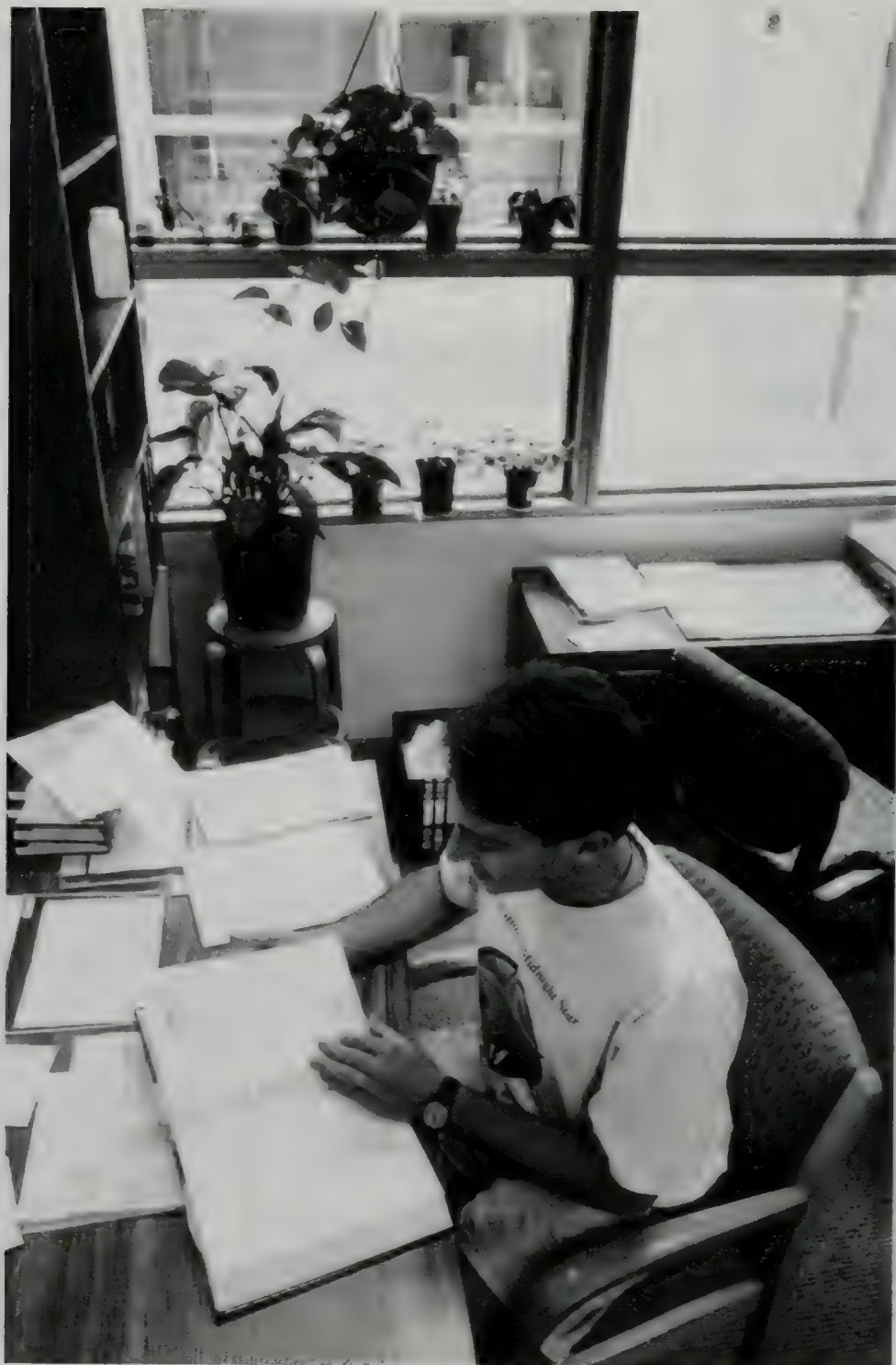
The research center is located at 338 Carr, Building, Box 90719, (919) 684-6641, on the Duke campus, and at 03 Caldwell Hall, C.B.# 3135 at UNC, (919) 966-5787. Dr. Jacquelyn Dowd Hall is the academic director and Christina Greene is the project director.





## *Resources for Study*

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## The Libraries

The libraries of the university consist of the William R. Perkins Library and its seven branches on campus: Biology-Forestry, Chemistry, Lilly, Engineering, Music, Mathematics-Physics, Special Collections; the Pearse Memorial Library at the Duke Marine Laboratory in Beaufort; and the independently administered libraries of Divinity, Law, Medicine, and Business (Fuqua). As of June 1994, these libraries contained over 4,300,000 volumes. The collection includes 10.9 million manuscripts, and over 2,000,000 public documents.

*The William R. Perkins Library.* The William R. Perkins Library, the main library of the university, houses books, journals, and online resources supporting the humanities and social sciences, as well as a large collection of United States federal and state documents, public documents of many European and Latin American countries. The library is a depository for U.S., North Carolina, and European documents. An international focus is evident throughout the library collections, reflecting the global strengths of area programs at the university. Included are extensive research collections from and about South Asia, Latin America, Africa, Europe, Russia, and Poland, as well as the country's largest collection of Canadiana. The East Asian Collection offers resources in Japanese, Chinese, and Korean on a variety of topics, predominantly history, politics, literature, and language. The newspaper collection includes many eighteenth-century titles; strong holdings of nineteenth-century New England papers; and antebellum and Civil War papers of North Carolina, South Carolina, Virginia, and Georgia; as well as many European and Latin American papers.

The Special Collections Library holdings range from ancient papyri to records of modern advertising. They number more than 200,000 printed volumes and more than 10.9 million items in manuscript and archival collections. They support research in a wide variety of disciplines and programs, including African-American studies, anthropology, classics, economics, history, literature, political science, religion, sociology, and women's studies. Areas of particular strength in the collections include the history and culture of the American South, English and American literature, history of economic theory, British and American Methodism, and the history of modern advertising.

The Circulation/Reserves Department houses the required reading materials placed on reserve for most graduate and undergraduate courses. The department is phasing in campus online access to reserve readings.

The Lilly Library houses the university's principal collections of the visual arts and art history, drama, and philosophy. The Lilly Library is also the location of the Paul B.

Williams Multimedia Broadcast Center. This state-of-the-art facility features remote transmission facilities for the campus as well as the film and videocassette collection. The Music Library, located in Room 113 of the Mary Duke Biddle Music Building, and the Music Media Center, located in Room 027 of the same building, are administered as a single branch library within the Perkins library system. The Music Library contains a rapidly expanding collection of scholarly reference materials, books on music, music scores, and over 200 journals in the field. The Music Media Center has a collection of over 17,000 media items, including compact discs, cassettes, LP recordings, laser discs, and videotapes, plus a collection of over 10,000 microforms, along with various facilities for listening and viewing. The branch libraries serve the academic disciplines bearing their names. The Lilly Library on East Campus, however, contains a small general and reference collection, as well as the university's principal collections of art and art history materials.

The libraries at Duke, the University of North Carolina at Chapel Hill, and North Carolina State University are connected by a computer network. Members of the Duke community can easily and quickly determine what books and other library materials are held by UNC and NCSU. Through a reciprocal borrowing agreement, faculty and students at Duke may borrow materials from both of these libraries.

Reference librarians are on duty in Perkins Library for most of the hours the library is open. Their primary responsibility is to assist patrons in making the most effective use of library collections and facilities. In addition to answering specific questions, the reference librarians also help patrons access information by identifying and explaining the use of library sources and by giving formal and informal instruction to groups of students, faculty, or staff. Professional reference service is available to students in all other campus libraries.

Tours of the Perkins Library are given frequently during Orientation Week and upon request throughout the year. Information about other campus libraries may be obtained from the staff in each of the libraries. The library has both facsimile and copying services. The rules with regard to copyright and a schedule of fees for reproduction services are available in the library at the point of service.

## **THE DIVINITY SCHOOL LIBRARY**

The Divinity School Library contains a collection of more than 295,000 volumes in the field of religion and related disciplines. Although an integral part of the university's twelve-unit library system, the Divinity School Library has its own separate facilities in the Divinity School building. Its book collection is operated on the open stack system, and its reading rooms provide study facilities for students, space for the special reference collection in religion, and for the more than 600 religious periodicals to which the library currently subscribes.

Staffed by a librarian and a reference librarian trained in both theology and library administration, by a supporting staff of three persons, and by a number of student assistants, the Divinity School offers a variety of reference services to assist the student in selecting and locating materials. The staff, in cooperation with the faculty, maintains a book and periodical collection to support basic course work as well as advanced research in all major fields of religious studies.

## **THE FUQUA SCHOOL OF BUSINESS LIBRARY**

The Fuqua Library houses the principal business collections for the university, and includes books, journals, reports, videotapes, working papers, and data bases in accounting, entrepreneurship, finance, human resources management, industry studies, information science, international business, managerial economics, marketing, organizational behavior, and operations management. The library's collections are tailored to the needs of the students and faculty of the Fuqua School and recent acquisitions include important business issues in the curriculum, such as diversity,



business in the environment, global business management, health services management, reengineering, and total quality management.

### **THE MEDICAL CENTER LIBRARY**

The Medical Center Library, located in the Seeley G. Mudd Communications Center and Library Building, provides services and informational resources necessary to further educational, research, and clinical activities in the medical field. In addition to the faculties and students in the Schools of Medicine, Allied Health, and Medical Center graduate departments, the library serves the professional and technical staffs of Duke Hospital as well as other health professionals throughout North Carolina. Over 270,000 volumes are available; approximately 3,000 journal subscriptions are received currently, in addition to extensive back files of older materials. Professional reference librarians are available for assistance in the use of library resources, and arrangements may be made for individual or group tours, instruction, or specialized seminars.

The History of Medicine Collections, including the Josiah C. Trent Collection, consist of rare books and manuscripts and a supporting group of histories, biographies, bibliographies, pictures, and ephemeral materials. The rare books are available to all, but are restricted to library use. Most modern books may be borrowed. The History of Medicine Collections also include the Duke Authors Collection, which preserves an archival copy of each book published by a member of the Duke medical faculty. The Frank Engel Memorial Collection consists of a small group of books for leisure reading in nonmedical subjects, supplemented by several newspapers and popular magazines. A reserve collection of heavily used books and journals is maintained in the Medical Sciences Branch Library located in the Nanaline Duke Building and covers the fields of biochemistry, genetics, pharmacology, and physiology.

### **THE SCHOOL OF LAW LIBRARY**

The School of Law Library, with over 450,000 volumes, serves both the university and the local legal community. It features comprehensive coverage of basic Anglo-American primary source materials, including nearly all reported decisions of federal and state courts, as well as current and retrospective collections of federal and state codes and session laws. Digests, legal encyclopedias, and other indexing devices provide access to the primary documents. A large section of the library collection is devoted to treatises on all phases of law, as well as history, economics, government, and other social and behavioral sciences relevant to legal research. The treatises are organized in the Library of Congress classification system and are accessible through a public catalog. Special treatise collections are maintained in several subject areas, including the George C. Christie collection in jurisprudence and the Floyd S. Riddick collection of autographed senatorial material. The library is a selective depository for United States government publications, with concentration on congressional and administrative law materials. The library receives the records and briefs from the United States Supreme Court, the Fourth Circuit Court of Appeals, and the North Carolina Supreme Court and Court of Appeals. In addition to its Anglo-American holdings, the library holds substantial research collections in foreign and international law. The foreign law collection is extensive in coverage, with concentrations in European law and business law materials. The international law collection is strong in primary source and treatise material on both private and public international law topics. Undergraduate and graduate students whose course of study requires access to legal literature may use the library. However, access to the library may be restricted during certain times because of accreditation standards.

### **UNIVERSITY ARCHIVES**

The Duke University Archives, the official archival agency of the university, collects, preserves, and administers the records of the university having continuing administra-

tive or historical value. The institutional archives, which also include published material, photographs, papers of student groups and faculty, and selected memorabilia, are available for research under controlled conditions in 341 Perkins Library.

## Science Laboratories

**Computer ASSIST Center.** For a contemporary university, extensive computing resources are essential. At Duke, the Computer ASSIST Center is the organization that works in partnership with members of the university community to enable them to achieve their goals through computing.

The Computer ASSIST Center supports extensive personal computer and Unix workstation services located throughout the campus. There are six Unix workstation laboratories and clusters containing DEC computers, located in the North, Sociology-Psychology, Biological Sciences, Carr, and Engineering buildings. These workstations are connected to two DEC computer servers and six file servers. There are three laboratories of MS-DOS based personal computers housed in North, Perkins, and West Duke buildings, five other clusters of MS-DOS computers, and nine clusters of Macintosh computers spread throughout the campus. All clusters have dot matrix or laser printers and several are connected to the campus network (DukeNet). While there is a slight charge for use of the laser printers, there is no charge for use of the computers. Free e-mail accounts are also available for students from Computer ASSIST.

DukeNet is a fiber optics, backbone network, available in most campus buildings, that provides access to the DEC Unix System, to the Perkins Library online catalog, and to other computing resources, both at Duke and nationwide over the Internet network. DukeNet is managed by Network Communications (NetComm) at Duke. Many undergraduate dormitory rooms are now wired for DukeNet. DukeNet access is also provided by dialing into a terminal server from a PC with a modem.

Other computing facilities available include mainframe services on an IBM ES/9000 provided by the Duke University Computation Center (DUCC) and supercomputing services on a Cray Y-MP and a Kendall Square KSR-1 parallel computer provided by the North Carolina Supercomputing Center (NCSC).

More specific information regarding Duke computing facilities may be obtained by calling the Computer ASSIST Center Consulting Desk at 660-2983, 9:00 a.m. to 5:00 p.m., Monday through Friday.

**Botanical and Zoological Laboratories.** Facilities for graduate study in the Departments of Botany and Zoology are located on the West Campus, together with those of supporting departments (physics, chemistry, geology, and the basic medical sciences). Scientists in botany and zoology with common interests are clustered in three buildings. The Biological Sciences building houses systematics, population genetics and evolution, animal physiology and functional morphology; the Duke Phytotron contains plant ecology; and the recently constructed Levine Science Research Center is home for developmental, cellular, and molecular biology, as well as the School of the Environment, Computer Science Department, and two basic medical science departments. The three buildings are within a five-minute walk and maximal interaction occurs between the different groups in botany and zoology through seminars, shared instrumentation and collaborative research projects. Special facilities available to botanists and zoologists include animal rooms, greenhouses, darkrooms, refrigerated and controlled environment laboratories, scanning and transmission electron microscopes, a Van de Graaf accelerator, X-ray machines, radiation and radioisotope equipment, a computerized morphometrics laboratory, and other modern research facilities. Extensive facilities for experimentation in environmental control of plant growth are available in the phytotron adjacent to the botany greenhouses.

The herbarium contains approximately 700,000 specimens and includes notable collections of mosses and lichens. Other assets for teaching and research are the Sarah







P. Duke Gardens on the West Campus; the eleven-acre experimental plot and field laboratory developed by the Department of Botany; the Duke Forest, comprising 7,700 acres of woodland adjacent to the West Campus; the field station for the study of animal behavior and ecology; and the Duke University School of the Environment Marine Laboratory, an interdepartmental facility located on a small island on the coast at Beaufort, North Carolina, where twenty-two buildings and a small flotilla of ships and boats provide teaching and research facilities for resident graduate students and faculty as well as visiting individuals or groups.

Duke University, through the botany and zoology departments, is a member institution of the Organization for Tropical Studies, Inc., a consortium of universities with field station facilities in Costa Rica that provide opportunities for course work and research in tropical science.

**Highlands Biological Station.** Duke University holds a contributing membership in the Highlands Biological Station at Highlands, North Carolina, on the southern edge of the Blue Ridge Mountains at an elevation of 4,118 feet. The station and the region offer an excellent opportunity for field studies and some laboratory work. A limited number of qualified students in botany and zoology may make arrangements to carry out research here. Scholarships for advanced study during the summer months are available through the station.

For further information contact Dr. M. D. Rausher, Department of Zoology, Duke University, Durham, North Carolina 27706.

**The Phytotron.** The phytotron, a national environmental control facility operated for the National Science Foundation, is adjacent to the Biological Sciences Building and is administered by the botany department. The phytotron is an integrated series of plant-growth rooms, chambers, and greenhouses, with forty-six separately controlled environments providing more than 4,000 square feet of plant-growing space. The factors of the environment controlled in the units to study plant growth include light, temperature, nutrients, carbon dioxide concentration, and humidity. By using the conditions in various day and night combinations, an exceptionally large number of environments can be simulated for testing the growth responses of plants. The phytotron also includes research laboratories and facilities for studying and monitoring the physiological processes of plants as they respond to global environmental change.

Research space in the phytotron is available to graduate students and faculty at Duke and to members of other educational and research organizations. For information concerning the rental of research space, contact James F. Reynolds, Director of the Phytotron, Department of Botany, Duke University, Durham, North Carolina 27708.

**Duke Forest.** The Duke Forest comprises approximately 7,700 acres of land in five major divisions and several smaller tracts. A ten-minute walk from campus will take one well into many parts of the Durham division, and a network of roads and fire trails make almost all areas of the forest easily accessible.

The forest lies primarily in Durham and Orange counties, near the eastern edge of the piedmont plateau, and supports a cross-section of the woodlands found in the upper coastal plain and lower piedmont of the Southeast. A variety of timber types, plant species, soils, topography, and past land use conditions are represented. Elevations range from 260 to 760 feet. Soils of the region are derived from such diverse parent materials as metamorphic rock of the Carolina slate formation, granite, Triassic sedimentary rock, and basic intrusives.

The forest serves for research in such areas as forestry, zoology, botany, and ecology by faculty and students at Duke and neighboring universities. Background information useful to researchers covers such features as soils, topography, inventory, plantation and cultural records, as well as a bibliography of past and current studies. Current work on problems associated with developmental pressures at the urban-rural interface and integrated approaches to natural resource management have multiplied the value and

benefit of the forest. For information contact: Judson Edeburn, Duke Forest Resource Manager, Room 206-A Biological Sciences Building, Duke University, Box 90332, Durham, North Carolina 27708-0332.

**Forestry Sciences Laboratory.** The Forestry Sciences Laboratory of the USDA Forest Service, Southeastern Forest Experiment Station is located in the Research Triangle Park near Durham. This research organization provides excellent opportunities to complement research conducted by students in the School of the Environment. Specialized research projects in timber investment opportunities, market efficiency, forest soils, insect toxicology, air pollution impacts, and the economics of forestry in developing countries are currently under way at the laboratory. The staff of the laboratory is available for consultation and participation in seminars. Arrangements may be made for students to conduct certain aspects of their research at the laboratory.

**Marine Laboratory.** The Nicholas School of the Environment Marine Laboratory, an interdepartmental training and research facility of the university, is located on Pivers Island within the Outer Banks, adjacent to the historic seacoast town of Beaufort, North Carolina, with direct access to the Atlantic Ocean, Cape Lookout National Seashore Park, estuaries, sand beaches, wetlands, and coastal forests. Because of the dynamic collisions of offshore currents, the area provides an excellent opportunity for marine study and research. The laboratory accommodates nearly 3,700 visitors per year, including fifteen to twenty resident graduate students who are involved in year-round activities. (For additional information concerning the graduate program, refer to the section on marine sciences in the chapter "Courses of Instruction" in this bulletin and the current *Bulletin of Duke University: Nicholas School of the Environment and the Marine Laboratory* 1994 publication.) The physical plant consists of twenty-three buildings, including classroom laboratories, six research buildings, four dormitories, a maintenance complex, and a dining hall. The laboratory has skiffs, the R/V *Susan Hudson* training vessel with the capacity to perform small-scale biological, chemical, geological, and physical oceanography, and a 135-foot research and training vessel, the R/V *Cape Hatteras*, which is operated by the Duke/UNC Oceanographic Consortium.

For information concerning teaching and research space, write to the Personnel and Auxiliaries Office, Duke University School of the Environment, Marine Laboratory, Beaufort, North Carolina 28516-9721.

**Zoology Field Station.** The Zoology Field Station, located less than one mile from campus, provides facilities for the study of penned, free-ranging, and caged animals in a protected wooded area of eighty acres with two ponds. For information regarding research space, write to the Chairman, Department of Zoology, Duke University, Durham, North Carolina 27706.

**Primate Center.** The Duke University Primate Center is located in Duke Forest about two miles from the main campus. The colony is composed of approximately 550 prosimian primates representing thirteen genera, twenty-two species, and twenty-eight sub-species. This is both the largest and most diversified colony of living lower primates in the world and the world's largest conservation center for primates. The center also houses frozen, preserved, and fossil primate collections. These collections and animals are utilized by faculty members and both graduate and undergraduate students in the Departments of Biological Anthropology and Anatomy, Environment, Geology, Psychology, and Zoology for all qualified research in primate paleontology, prosimian aging, locomotion, cytogenetics, comparative anatomy, behavior, and physiology. Applications for graduate study in one of these areas should be directed to the director of graduate studies of any of the five departments. For information pertaining to the use of the Primate Center, graduate studies, or availability of research space, write to Dr. Kenneth E. Glander, Director, Duke University Primate Center, 3705 Erwin Road, Durham, North Carolina 27705.



**Animal Care and Use Program.** The animal care and use program serves the research and teaching programs of Duke University. The program is centrally managed by laboratory animal veterinarians in the Division of Laboratory Animal Resources (DLAR). DLAR maintains a central vivarium, satellite facilities and a farm where laboratory animals are housed. The institutional animal care and use committee monitors the program to ensure the humane care and treatment of animals. Duke University is registered with the United States Department of Agriculture and is fully accredited by the American Association for the Accreditation of Laboratory Animal Care (AAALAC), which assures compliance with standards of NIH.

**Experimental Psychology Laboratories.** The facilities of the Department of Psychology: experimental include laboratories to study human memory, perception and cognition in children and adults, classical and operant conditioning in various species, maze learning, and taste and smell in animals and people. There are facilities for animal surgery, autoradiography, photographic darkrooms, histology, and psychophysiology to help relate vision, taste, and smell to brain aspects and to learning, memory, emotion, and development. There also are sound and speech processing capabilities, labs for visual observation of infant's and young children's social interactions, and various facilities for computational modeling. General purpose laboratories are well supplied with computers for various uses. To facilitate new projects, there are woodworking, metalworking, and electronic shop facilities staffed by full-time technicians. Additional facilities are available in the nearby Primate Center and the Duke and V.A. Medical Centers, as well as in area universities and in research companies in the Research Triangle Park.

**Chemistry Laboratories.** The Department of Chemistry is housed in the Paul M. Gross Chemical Laboratory, a building containing 146,000 square feet of total area. This well-equipped chemical laboratory provides conditions conducive to research in many areas of current interest. Nuclear magnetic resonance facilities include a broad band Varian XL-300, General Electric QE-300, Gn-300 (25 mm wide bore probe) and GN-500 frequency adjustable instruments, a JEOL FX-90Q, and two 60MHz proton instruments. An ESR spectrometer, the Varian E-9, provides an excellent facility for research in electron spin resonance. Mass spectrometric service is provided by a Hewlett-Packard GC-MS system with HPLC/MS capacity, as well as access to a VG-70S high resolution MS with MS/MS capability. X-ray diffraction cameras of all types are available, along with Enraf-Nonius CAD-3 and CAD-4 automatic diffractometers. Numerous instruments of varying sophistication for photoacoustic, fluorescence, infrared, routine FTIR, dispersive infrared, UV, Raman and ORD-CD spectroscopy are available; various laser sources, monochromators, and computerized data acquisition systems are associated with these systems. Some other significant research facilities include T-jump, stopped flow and diode array spectrometers for rapid kinetic studies, a circularly polarized luminescence spectrometer, and an ultra dry lab facility. A variety of preparative and analytical gas and liquid chromatographs are also located in the building and a number of analytical applications of robotic systems are employed. Research in biological chemistry is facilitated by the availability of an autoclave, media prep room, high speed centrifuges, and ultra centrifuges.

Computing facilities in the Department of Chemistry include a VAX 8350 with an associated tape drive and two 456 megabyte Winchester mass storage devices which operate in a multiuser FORTRAN environment. An Evans and Sutherland PS 390 and Tektronics graphics terminals are connected to the system as well as a cluster of DEC terminals. Clusters of Apple Macintosh, IBM, and AT&T PCs, and Sun workstations are also available. The departmental VAX system and many other computers associated with specific research groups are networked via Ethernet, which is linked to the university fiber optic network. Among the resources available via the network are



Duke's IBM 4381 mainframe and the North Carolina Supercomputer Center's Cray Y-MP 8/432.

The department has a machine shop and an electronics shop, and has access to the university glass-blowing shop. The facilities of the Duke University Marine Laboratory on the coast at Beaufort, North Carolina, are available for specimen collecting and processing studies of organic chemicals of marine origin. The Department of Chemistry Library, with holdings of approximately 45,000 volumes, is also located in the Paul M. Gross Chemical Laboratory. The library receives 375 current scientific periodicals, 275 serial subscriptions and has a computer facilities for complete information retrieval.

**Physics Laboratories.** The Physics Building houses research and instruction in the Departments of Physics and Mathematics. Additional space is provided by the adjacent Nuclear Building (TUNL) and Free Electron Laser (FEL) Laboratory Buildings. Graduate students studying in these two departments usually have offices in these buildings.

About half of the physics space is devoted to research laboratories for the department's programs. Special equipment includes: picosecond, dye, carbon dioxide, and far infrared lasers; a 45-MeV electron linear accelerator driving an infrared free electron laser (FEL) and a 1 GeV linear accelerator and high current electron storage ring driving an ultraviolet to soft X-ray FEL; a high-resolution 4 MeV Van de Graaff accelerator; a 20 MeV tandem Van de Graaff accelerator with polarized source and cryogenically-cooled polarized targets; a helium liquefier, cryostats, magnets, and associated equipment for research in the millikelvin temperature range; VAX computers for data collection and processing in nuclear physics and in high-energy physics; various minicomputers and microcomputers in the research groups; a cluster of seven NeXT computers for instructional/research use; and a Sun minicomputer for general departmental use.

The Mathematics-Physics Library is located in the Physics Building; it contains a large selection of books and scholarly periodicals. Also located in the building are appropriately staffed instrument and electronics shops.

**Engineering Research Laboratories.** The laboratories of the four departments of the School of Engineering contain extensive basic equipment that may be applied in several specialized fields. The facilities available for instruction and research are suggested by the following brief listing of equipment found in each department:

*Biomedical Engineering.* Biomechanics laboratories: hydraulic testing system, IBM PS/2 microcomputer, micro VAX II computer, optical displacement measuring system, silicon graphics/GE graphcon system, Sun micro systems SPARC station, Zonic modal analyzer. Biomedical materials and surface interactions laboratories: air- and water-cooled Argon lasers, air convection oven, capillary rheometer, FTIR infrared spectrometer, gamma counter, gel permeation chromatograph, Langmuir-Blodgett trough, liquid nitrogen cooled CCD camera, Nikon inverted microscope with phase contrast and epifluorescence, Ultimage image analysis system and Macintosh II, vacuum oven, Zeiss axioplun microscope, electrophysiology and neurophysiology instrumentation. Ultrasound imaging and transducer laboratories; CAD/CAM stations for circuit development, diamond tip dicing saw, high-speed video system, image processing system, laminar flow hood, multiple PCs and work station, PC board maker, ultrasound mechanical scanner, VAX 11/780.

*Civil and Environmental Engineering.* Faculty in civil and environmental engineering routinely design, construct, and adapt laboratory equipment for specialized teaching and research tasks in engineering mechanics, environmental engineering, geomechanics, structural engineering, transportation and systems engineering, and water resources engineering. In addition, arrays of standard laboratory facilities are available to support each research area.

Research and teaching facilities in engineering mechanics, structural engineering, and geomechanics include four independent closed-loop electrohydraulic dynamic loading systems (MTS), with a frequency range up to 100 Hz, and ranges of load to

capacity 6,000, 35,000, 50,000 and 220,000 lbs. The 6,000 lbs. actuator can develop a constant crosshead speed up to 50,000 in./min. For teaching and research, the department has a 10,000 lb. universal testing machine and a 10,000 lb. torsion machine both fully instrumented with computer data storage, as well as a Kistler force plate with 10 decades of sensitivity. Equipment is available for fabricating specimens and testing fiber-reinforced polymer composites. An environmental chamber tests in the temperature range of -100° to +350° F; equipment for spectral and modal dynamic analysis, and an ultra-high pressure triaxial shear apparatus is available for confining pressures up to 100,000 psi. Rock-testing facilities, model-testing equipment for anchored walls and penetrometer studies, a large-aperture research polariscope, a reflective photoelastic polariscope, and a sustained-loading facility for long duration in studies of prestressed concrete are routinely used in teaching and research procedures.

Research and teaching facilities in environmental engineering include wet and dry laboratories equipped to study a range of physical, chemical, and biological processes. A fully integrated resource recovery pilot plant, calorimetry for the measurement of heat values of secondary fuels, air classifiers interfaced with computer monitors, as well as indoor and outdoor water resources monitoring devices including flumes, Venturi meters, and digital computation hardware are available. The biotechnology and physical-chemical laboratories are equipped with autoclaves, a media preparation room, walk-in environmental rooms, numerous fume hoods, a biohazard containment facility for cultivation of genetically engineered microorganisms, fully instrumented bioreactors with on-line control, and various analytical instrumentation including liquid scintillation counting, autoradiography, atomic adsorption spectroscopy, total carbon analysis to ppb levels, gas chromatographs equipped with ECO, FID, and TCD detectors, HPLCs, computer-assisted image analysis microscopes, and a recently acquired fourier transfer infrared spectrometer facility.

Computer resources available to civil and environmental engineering students include a multitude of personal computers, two Digital Equipment Corporation Workstation clusters consisting of fifty workstations in total. Additionally, the department houses and maintains its own computing facility, providing five UNIX workstations (1DEC, 1 SUN, and PC's with silicon graphics 486 processors) and 9 IBM-compatible PC's also with 486 processors. This particular facility is dedicated to graduate student research and special undergraduate projects. Most of the computer resources are networked with the School of Engineering's ethernet backbone and are easily accessible from several locations in the department and across the campus. Depending on the specific application, students can successfully investigate problems in computational fluid and solid mechanics, rigid-body dynamics, particle and mathematical optimization as well as transportation and environmental systems engineering research topics. If additional computing capabilities are needed, access to the Microelectronics Center of North Carolina's Cray YMP vector processing supercomputer is available. Numerous software packages are available to students through the existing Computational Resource Center. Many problems addressed by the faculty and students of the Department of Civil and Environmental Engineering are computationally complex and could not be approached without the substantial computing facilities available at Duke.

*Electrical Engineering.* General computing laboratory equipped with several IBM RS-6000s servers and a fast interconnect network in a UNIX environment for interactive design, graphics, computation, and computer-aided engineering; Sun SPARC workstations for VLSI design; ethernet network for connection to regional, national, and international data networks; Signal Processing Laboratory with Sun workstations; microwave facilities for experimentation up to 35 GHz; robotics with a GE P-50 robot; microprocessor laboratory; Digital Systems Laboratory; solid-state power conditioning laboratories with dedicated computers for controlling instruments, including digital processing oscilloscopes and network and impedance analyzers, and for computer-aided design; clean room and semiconductor nMOS fabrication laboratory for inte-



grated circuits; a molecular beam epitaxy laboratory for III-V compound semiconductor crystal growth using a Riber Model 3R&D MBE system; access to the design, fabrication, and research facilities of the Microelectronics Center of North Carolina; and an ion implanter and MOCVD epitaxial growth system in a III-V compound semiconductor lab at the Research Triangle Institute.

*Mechanical Engineering and Materials Science.* The department has a number of well-equipped laboratories for studies in aerodynamics, acoustics, nonlinear dynamics and chaos, microscale and convective heat transfer, computational fluid mechanics and heat transfer, control theory, cell and membrane biomechanics, biorheology, polymer engineering, corrosion, electronic materials, physical metallurgy, positron annihilation spectroscopy, and expert systems. Equipment in these laboratories includes a wind tunnel, a scanning electron microscope, a scanning tunneling microscope, doppler broadening and lifetime positron systems, a liquid helium cryostat, DSC/DMA facilities and diffusion furnace, inverted microscopes, low-light-level video cameras and a photon counter, cell-culture systems, an anechoic chamber, a dynamic signal analyzer and laser velocimeter for bearing analysis, an X-ray generator and diffractometer, FTIR spectrometer, a high-power laser with lock-in amplifier, and a fluorescence microscope. A variety of computational equipment is available including a mini-supercomputer access to a regional supercomputer.

**F. G. Hall Hypo-Hyperbaric Center.** The F. G. Hall Hypo-Hyperbaric Center contains eight hyperbaric and/or hypobaric pressure chambers used to simulate altitude or deep-sea diving conditions, for the purpose of both experimentation and medical treatments. The interconnected steel chambers can simulate depths of 3,600 feet, or altitude of 155,000 feet, a capability unmatched in the United States. In 1982 a research dive to 2,250 feet set a new world's record. Basic and applied research of this type has led to the development of safer and faster decompression methods, mechanisms of oxygen toxicity together with new treatments for diving accidents and diseases treated with high-pressure oxygen. The laboratory provides opportunities for research and for training for physicians, postdoctorates, and graduate students in pressure-related medicine and physiology. The program is multidisciplinary with major participation by the Departments of Anesthesiology, Medicine, Surgery, Cell Biology, Neurobiology, and the School of Engineering.

**The Medical Center.** Currently the Medical Center at Duke University occupies approximately 140 acres on the West Campus. The southern quadrant is contiguous with the main quadrangle of the university and consists of the following: Davison Building, Duke Hospital South, Baker House, Barnes Woodhall Building, Diagnostic and Treatment Building, Ewald W. Busse Building, Eugene A. Stead Building, Clinical Research II, and the Edwin A. Morris Clinical Cancer Research Building.

The northern portion includes the Joseph and Kathleen Bryan Research Building for Neurobiology, Nanaline H. Duke Medical Sciences Building, Alex H. Sands Medical Sciences Building, Edwin L. Jones Basic Cancer Research Building, Clinical and Research Laboratory Building, Bell Building, Seeley G. Mudd Communications Center and Library, Joseph A. C. Wadsworth Building (Eye Center), Duke Hospital North Division and Anlyan Tower, and Lenox Baker Hospital.

In the western section of the campus are: Surgical Oncology Research Building; Environmental Safety Building; Research Park Buildings I, II, III, and IV; the Vivarium; and the Cancer Center Isolation Facility.

In the eastern section of the campus are Pickens Rehabilitation Center, Civitan Mental Retardation and Child Development Center, and Trent Drive Hall.



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## *Student Life*



## Living Accommodations

Duke University has two residential apartment facilities in which graduate and professional students live. These apartments are available for continuous occupancy throughout the calendar year. All of the apartments are completely furnished and an itemization of furnishings is included with the floor plans sent out in the application bulletin. Spaces in apartments for single students are provided on an individual basis with each student paying rent per academic term to the university. This method permits students to share apartments with others of their choice. When this is impractical, the Department of Housing Management strives to place persons with similar interests together.

**Town House Apartments.** Town House Apartments, located about three blocks from the main East-West Campus bus line, is a thirty-two-unit complex. These apartments are more spacious than most apartments found on campus or in Durham. Because of their location away from the academic facilities, Town House Apartments offer a change from normal campus life and activities.

Each air-conditioned apartment includes a living room, a master bedroom, a smaller bedroom, a bath and a half, and an all-electric kitchen with a dining area. Spacious closets and storage spaces are provided within each apartment. A swimming pool, located in the center of the complex, is open during the late spring and throughout the summer months.

All utilities—water, heat, air-conditioning, gas, and electricity—are provided. Occupants must make arrangements with the local telephone company, GTE, to pay for telephone service. GTE usually requires a deposit when initial application for service is made. The company should be contacted prior to arrival as it usually takes several days to obtain service.

**Central Campus Apartments.** In 1975 Duke University completed a 500-unit apartment complex. A swimming pool, located in the center of the complex, is open during the late spring and throughout the summer months. Additional facilities include a pub, convenience store, tennis courts, and basketball courts.

All utilities—water, heat, air-conditioning, and electricity—are provided. Telephone jacks are provided in each apartment. Duke University's Tel-Com supplies telephone service. Central Campus Apartments residents are responsible for providing their own phones and having them connected.

Efficiency, two-bedroom, and three-bedroom apartments are rented to graduate students. Efficiency units are very limited in number and are generally not available to new students.

**Application Procedures.** When students are informed of their acceptance to Graduate School they will also receive a postcard on which to indicate preference for university

housing. This postcard should be returned to the Department of Housing Management. Detailed information on the types of accommodations and application forms will be forwarded to the accepted student. Assignment to all university housing is made on a first-apply, first-assigned basis, and it is not guaranteed.

**Off-campus Housing.** The Department of Housing Management maintains a listing of rental apartments, rooms, and houses provided by property owners or real estate agencies in Durham. These listings are available in the department only; during the summer an assistant is available to answer questions and aid students in their attempt to obtain housing off campus. Information on commercial apartment complexes in the Durham area may be obtained by indicating a preference for off-campus housing on the postcard which you will receive with your acceptance notice. Except for assuring that owners sign a statement of nondiscrimination, off-campus property is in no way verified and neither the university nor its agents negotiate between owners and interested parties.

The search for accommodations should begin as soon as possible after acceptance to the Graduate School. A visit of two or three days will allow you the opportunity to make use of the off-campus service and to inspect personally the available facilities.

Further details regarding off-campus housing will be distributed to all new matriculants during the summer preceding their first registration. The form of this materials is *A Guide to Duke and Durham*, a handbook prepared annually by the Graduate and Professional Student Council.

**Duke University Marine Laboratory.** The Duke University Marine Laboratory, located on Pivers Island, has cottage-type residence halls which are available. Further information may be obtained from the publication *Marine Laboratory 1994*.

## Dining Services

Graduate students are encouraged to dine on campus at any Duke Dining Services facility. Dining Services provides cafeterias, restaurants, fast food operations, delis, snack bars, ice cream/dessert shops, and catering services in convenient locations throughout campus.

On West Campus, students are invited to dine in the Blue & White Room (cafeteria), the University Room (cafeteria), the Oak Room (restaurant), the Cambridge Inn (deli, hot foods, salad bar, and dessert shop), the Rathskeller (hamburgers, pasta, and sandwiches), Burger King Cafe (fast foods), Lick's (ice cream/frozen yogurt), and The Café and The Perk (coffee bars), Sanford Institute Deli (sandwiches), LSRC Dining Room (hot foods, sandwiches, salad bar). On East Campus, visit the newly renovated East Food Court (a collection of food shops) and the Upper East Side (snack shop). North and Central Campus food service locations include Trent Cafe (grill, sandwiches, and desserts) and The Pub on Central Campus (specialty sandwiches, salads, and beverages).

Food purchases may be paid for any one of three ways: by using cash, a dining account, or a flexible spending account. Both the dining account and the flexible spending account allow a student to make purchases on campus by accessing a prepaid account carried on the student identification card, or DukeCard. Information about these DukeCard accounts is available from the Duke Card Office, 024 West Union Building, Box 90911, Durham, NC 27708-0911, (919) 684-5800.

Further information about campus dining service facilities and dining plan options is available from Duke Dining Services, 029 West Union Building, Box 90898, Durham, NC 27708-90898, (919) 660-3900.

## Services Available

**Student Health Program.** The Duke Student Health Program is administered by the Department of Community and Family Medicine, Duke University Medical Center.



Medical services are provided by family physician faculty, physician assistants, and nurse-practitioners.

*The Duke Family Medicine Center (684-3180)*, located on the corner of Erwin Road and Trent Drive, is the primary location for medical care. Students are seen by appointment Monday-Friday, 8:00 A.M.-7:30 P.M., Saturdays from 10:00 A.M.-1:30 P.M., and Sundays from 2:00 P.M.-4:30 P.M. A wide variety of services are available: medical care, GYN clinic, health education, sports medicine, laboratory, pharmacy, travel and immunization, x-rays, cold/flu self-help table, allergy clinic, and nutrition counseling.

Students are encouraged to use the Duke Family Medicine Center as their portal of entry to other health resources when needed, including the specialty clinics at Duke University Medical Center. This will help with coordination of appropriate care.

**For problems arising after hours, students should call the Infirmary (684-3367).** After consulting with the physician on call, the nurse may advise the student to come to the Infirmary or to the Duke Emergency Department (684-2413) for further evaluation. In the event of an obvious life-threatening emergency, students should go directly to the Emergency Department. If necessary, Duke Public Safety (call 911 or 684-2444) will provide on-campus transportation to the Emergency Department or the Infirmary.

*The Infirmary (684-3367)*, located on the fourth floor of Duke University Hospital-South Division, Purple Zone, provides inpatient treatment of illnesses too severe to manage in the residence hall or apartment, but not requiring hospitalization.

*The Health Education* component of Student Health is headquartered at the Trent Drive Hall (684-3620, ext. 325). Health education staff are available, by appointment, to assist students in making informed decisions that promote their health. Topics of concern include alcohol and other drug usage, eating and nutrition, sexually transmitted diseases, stress management, and others. Health education staff are also available on a drop-in basis at the Healthy Devil Health Education Center, Room 113, House 0 in Kilgo quad on West Campus. Free, confidential pregnancy testing and pregnancy options counseling is also available there, by appointment (684-3620, ext. 325).

*Sports Medicine Services:* The Student Sports Clinic is located on West Campus, in the basement of Card Gym. A physical therapist is available from 3:00-6:00 P.M. weekdays, on a walk-in basis, to assess exercise-related problems, and to outline short-term treatment plans to aid recovery, and help prevent reinjury. The Sports Medicine Clinic is located on the third floor of the Finch-Yeager Building adjacent to Wallace Wade Stadium. There students may be seen by a Student Health physician, by appointment (684-6721).

*Counseling and Psychological Services (CAPS; 660-1000)*, is a complementary service to the Student Health Program. Mental health and career counseling services are available, as detailed in the CAPS brochure.

*Confidentiality.* Information regarding the physical or mental health of students is confidential, released only with the student's permission.

**Health Fee.** All currently enrolled full-time students and part-time degree candidates are assessed a Student Health Fee. This covers most services rendered within the Student Health Program (see below) during each enrolled semester. An optional Summer Health Fee for students not enrolled in summer session is also available through the Bursar's Office.

**Health insurance** is essential to protect against the high cost of unexpected illnesses or injuries which would require hospitalization, surgery, or the services of specialists outside the Student Health Program. All students are required to have such insurance. For those not adequately covered by other insurance, the Duke Student Insurance Plan is specifically designed to complement the coverage provided by the Student Health Fee. Coverage for the student's spouse and dependent children may also be purchased. Further information about this plan may be obtained from the Student Insurance Office (684-6455) or from Hill, Chesson, and Associates (489-7426).

*Services Covered by the Health Fee.* The health fee covers most of the services at Duke Family Medicine Center if medically indicated and rendered by a student health provider:

- Medical care for acute and chronic illness, and minor injuries;
- One annual health maintenance examination and associated studies;
- Routine laboratory and X-ray services;
- Medications on the approved formulary, as required for short-term treatment of nonchronic conditions;
- Immunizations required for programs receiving academic credit at Duke (a supplemental fee may be required for certain immunizations), excluding premaritication immunizations.

The health fee covers a variety of other services at Duke Family Medicine Center and other locations:

- Health education and health promotion including nutrition consultation;
- Sports medicine, excluding specialists' (orthopaedic) services;
- Infirmiry service, excluding meals and diagnostic testing order by specialist consultants;
- Mental health and career counseling at CAPS.

*Services not Covered by the Health Fee.* If you unsure whether a service is covered, please ask one of the Student Health staff prior to receiving service. You are financially responsible for the following:

- Medical care provided in the Emergency Department, hospital, or other non-student health facility;
- Dental care;
- Pregnancy care or deliveries;
- Tests, procedures, prescriptions not medically indicated or ordered by non-Student Health providers, or not on the approved list of services provided;
- Immunizations required for entrance to Duke or other universities, or for personal travel,
- Medications required for long-term use and contraceptives.

Upon arrival on campus, all students receive a detailed brochure about the program and the services covered by the Student Health Fee.

**Career Development Center.** The mission of the Career Development Center is to educate the students of Duke University in the arts of self-assessment, career exploration, career planning, and job hunting with the goal of helping them develop rewarding and fulfilling careers. The center primarily serves the students and alumni of Trinity College, the School of Engineering, and the Graduate School.

Career counselors are on staff to help students at Duke begin the process of discovering career interests. The career specialist for graduate student concerns provides specific information and advice to graduate students interested in pursuing academic and alternative professional careers. Other career specialists help students focus on specific career fields, including the arts, business, community service, education, engineering, mathematics, computer science and the physical sciences, government, health and life sciences, higher education, international careers, and mass media.

Programs and services of the center include the credential service, which collects and sends letters of recommendation, the video interviewing program which offers interview training, the on-campus recruiting program offering interviews for permanent positions with a wide variety of national organizations, and DukeSource providing access to alumni /ae advisors in a wide variety of academic disciplines and career fields.

*The Career Spectrum*, a weekly career page in Monday's *Duke Chronicle*, is designed to keep students aware of current career-related opportunities on- and off-campus. Announcements of job openings, career seminars, workshops, and information sessions aalso appear each month in a CSC newsletter mailed to graduate departments. The Career Library and Job Room provide a wealth of printed and database materials on



specific career fields and specific employers. CareerNet, an online career information system, provides information at computer clusters located throughout the university and is available until midnight on weekdays and twenty-four hours a day over the weekends. Using CareerNet, a student may review bulletins, information about the center, review summer and full-time job listings, and register to participate in center programs.

**The Office of Continuing Education** also offers career development services, with both individual consultations and group workshops. The office provides help with resume preparation and offers guidance tests, including the Myers-Briggs Type Indicator, a test of personality preferences that allows students to better understand their own personalities, gain insight into differences they experience with others, and begin to look at career fields that fit their personality preferences. The office does charge a fee for these services. For more information, please call 684-6259.

## Student Affairs

**The Office of Graduate Student Affairs and Minority Programs (OGSAMP)** serves as an advocacy office dedicated to providing a supportive environment which enhances the quality of graduate student life and fosters a sense of connection to the interdisciplinary scholarly community at Duke University by interacting with university offices to increase accessibility for graduate students and awareness of graduate student concerns.

OGSAMP plans several social events which provide opportunities for graduate students to interact with each other, departments outside their specific disciplines, and the community as a whole, as well as educational programs to increase awareness of the many resources available to graduate students.

Additionally, OGSAMP has a general counseling component that provides support for students with special concerns. Through individual and group meetings and referral to other resources within the university and the larger community, OGSAMP assists in the adjustment of students to life at Duke. The importance of relationships with faculty and involvement in departmental research activities is particularly stressed.

**Cocurricular Activities.** Graduate students at Duke University are welcome to use such university recreational facilities as swimming pools, tennis courts, the golf course, and to affiliate with the choral, dance, drama, music, and religious groups. They may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities.

A full program of cultural, recreational, and religious activities is presented by the Office of Cultural Affairs, the Duke University Campus Ministry, the Duke University Union, the Office of Student Activities, and recreational clubs. The Duke University Union sponsors a wide range of programs through its committees, which are open to all segments of the campus community. Included are touring Broadway shows; rock, jazz, and pop concerts; speakers; films; a film-making program; the largest fully student-run television station in the country; art exhibits in three galleries; and a broad program in crafts located in Southgate Dormitory and the Bryan University Center. The Aquatic Center and the East Campus Gymnasium pool are available to students, faculty, and staff families. The handball, racquetball, squash, and tennis facilities and the weight room on East and West Campus are also available. Interested students may participate in softball and other team sports.

The University Center complex includes the Bryan University Center, which houses the Information Center, two drama theaters, a film theater, lounges, stores, meeting rooms, games room, the Rathskeller, art gallery, and other facilities; the West Union, which includes dining facilities; and Flowers Building, which includes student publications, Page Auditorium, and the university box office.



Inquiries should be directed to the Recreation Office, 105 Card Gymnasium; the Office of Cultural Affairs, 109 Page Building; Duke Chapel; the Duke University Union, Bryan University Center; or the Office of Student Activities, Bryan University Center.

Full information regarding the scheduling of major events and programs for the entire year will be found in the Duke University *Yearly Calendar*; detailed and updated information for the fall and spring semesters in the *Duke Dialogue*, available each Friday; updated information for the summer session in the *Summer Session Calendar*, published at the beginning of each summer term; and the *Duke Chronicle*, published each Monday through Friday during the fall and spring and each Thursday during the summer. Copies of the Duke University calendars may be obtained at the information desk, Bryan University Center, or the calendar office, Page Building. Also during the summer, the *Summer Session Calendar* is published weekly by the summer session office and is available at convenient locations.

**Graduate and Professional Student Council.** The Graduate and Professional Student Council is the representative body for the students of graduate departments and professional schools. The council provides a means of communication between schools and between graduate students and the administration. The council selects graduate students for membership on university committees. Representatives of each department and officers of the council are selected annually.

**Religious Life.** The Duke University Chapel, open from 8:00 a.m. until 10:00 p.m., provides a magnificent setting for daily prayer and meditation. In addition, a variety of worship experiences are provided throughout the week including the university service of worship at 11:00 A.M. each Sunday, noonday prayer each weekday during term, and choral vespers each Thursday at 5:15 P.M. The one hundred and fifty-voice Chapel Choir is open by audition to all interested singers. The Graduate and Professional Student Fellowship, sponsored by Duke Chapel, provides ecumenical fellowship as well as service opportunities for interested students. Duke Campus Ministry also invites graduate students to participate in the various religious life groups. Contact the Office of Dean of the Chapel or the assistant dean of the Chapel, Duke Chapel, for further details.

## Visiting Scholars

The libraries and other facilities of Duke University are made available, to the extent practicable, to faculty members of other colleges and universities who wish to pursue their scholarly interests on the Duke campus. Such visitors are not charged unless they wish to participate in activities for which a special fee is assessed. Inquiries pertaining to visiting scholars should be addressed to the department chairman concerned or the dean of the Graduate School.

## Postdoctoral Research

Scholars engaged in postdoctoral research often find it advantageous to use the resources of Duke University during the summer. The university welcomes these visitors and makes living accommodations available to them during the summer sessions from May 9 to August 8. Persons desiring research privileges (library and/or laboratory) should request approval through the department in which the research interests lie or through the Graduate School.



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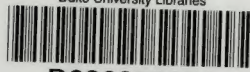
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